

Pushing the Limits of Deep-Sea Transmission, Hengtong Wins CSIST Grand Prize for Scientific and Technological Progress

SHANGHAI, SHANGHAI, CHINA, September 9, 2026 /EINPresswire.com/ -- Submarine optical cables serve as the "neural hub" carrying over 95% of global international data traffic, and they are a cornerstone of the digital economy and national strategic security. Recently, the results of the 2025 Chinese Society of Imaging Science and Technology (CSIST) Science and Technology Awards were announced. The project "Key Technologies and Applications of Space-Division Multiplexing-Based Marine Optical Fibers and Cables," jointly completed by [Hengtong](#) Huahai, Hengtong Fiber, Hengxin Quartz, together with Soochow University and Xi'an Jiaotong-Liverpool University, was awarded the Grand Prize for Scientific and Technological Progress, in recognition of its outstanding technological innovation and industrialisation achievements.

The Chinese Society of Imaging Science and Technology is the authoritative academic organisation in the fields of imaging and photosensitive science in China. Its award selection process is rigorous, with a focus on honouring innovative teams that have achieved independent intellectual property rights, successful technology commercialisation, and significant economic or social benefits. Winning this Grand Prize marks strong recognition by a top national academic body of Hengtong's comprehensive strength in marine optical communications.

Faced with the complex challenges of deep-sea communications, Hengtong's subsidiaries—Hengtong Huahai, Hengtong Fiber, and Hengxin Quartz—joined forces with leading academic and research partners to carry out a full-chain technological tackle. The project team successfully overcame core technical difficulties, including ultra-large-capacity transmission in submarine cable systems, optical transmission stability, and resistance to 10,000 meter class hydrostatic pressure as well as water and gas tightness. They achieved full self-sufficiency across the entire industrial chain—from core materials and key products to complete equipment—and



successfully completed large scale production and engineering deployment.

Innovative Algorithms Break the "Capacity Bottleneck"

To address "inter core crosstalk"—the key limiting factor in capacity for space division multiplexing transmission in the deep ocean—Hengtong developed a proprietary algorithm that enables independent transmission of optical field lines in different cores. This significantly reduces computational complexity while effectively adapting to long haul submarine transmission, removing obstacles to higher speed deep sea communications.



Ultimate Process Precision Approaching "Physical Limits"

To improve transmission speed and stability, the team independently developed ultra low loss single core and multi core weakly coupled marine fiber profile structures. Through precise material composition formulations and highly uniform deposition control, they reduced fiber attenuation to near the theoretical limit of silica substrate. At the same time, they established a scientific fiber life prediction model to ensure precise control of attenuation deviations in 32 fiber pair cables, meeting the stringent requirements of next generation submarine communication systems.

Specialised Structure Conquers the "Abyssal Depths"

To overcome the challenges of 10,000 meter class hydrostatic pressure and water /gas tightness in the deep sea, Hengtong innovatively designed a unique deep sea cable structure, developed specialised welding equipment, and optimised manufacturing processes. The developed submarine cables successfully passed rigorous pressure and water penetration tests, with significantly improved water blocking performance, enabling safe and reliable operation across all water depths.

To date, the relevant technologies have been successfully applied to landmark projects including the world's first 16 fiber pair submarine cable system based on space division multiplexing, and the fully self owned 22,000 km PEACE intercontinental submarine cable linking Asia, Africa, and Europe. These achievements have helped Hengtong Huahai secure the No. 1 market share in China and rank among the global top four in submarine cable systems.

This Grand Prize is both an affirmation and an incentive. Looking ahead, Hengtong will continue to leverage its full industry chain advantages in "quartz materials + specialty optical fibers + submarine cables," deeply integrate industry university research application efforts, and keep

pushing the frontiers of marine communication technology. The company is committed to contributing even more to the development of China's marine information infrastructure and the digital economy.

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