

“TDB-DST Supports Indigenous Development of High-Performance Acoustic Antenna System for Underwater High Data Rate Communication”

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In a strategic step toward strengthening India’s capabilities in advanced marine technologies, the Technology Development Board (TDB), Department of Science & Technology (DST), Government of India, has signed an agreement with M/s Xalten Systems Pvt. Ltd., India, for the project titled *“Development of High-Performance Acoustic Antenna System for Underwater High Data Rate Communication for Video Transmission.”*

The TDB-supported project addresses a critical technology gap in underwater acoustic communication by developing next-generation hydrophone array sensor systems capable of enabling reliable, high-bandwidth communication—including real-time video transmission—between autonomous underwater platforms. The initiative is being undertaken in collaboration with Subnero Pte Ltd, Singapore, combining Indian expertise in underwater acoustics with advanced software-defined communication systems.

With the increasing deployment of autonomous underwater vehicle (AUV) swarms for offshore energy operations, deep-sea exploration, marine research, and strategic applications, the demand for robust, high-data-rate underwater communication systems has become urgent. Existing global solutions, offered by established players such as Kongsberg Maritime, Sonardyne and EvoLogics, largely focus on long-range, low-bandwidth communication built on legacy architectures. The proposed indigenous system aims to bridge this gap by developing wideband hydrophones optimized for short-range, high-speed communication between multiple autonomous platforms.

The project envisions the design and development of an advanced acoustic antenna system capable of megabit-per-second data rates while maintaining reliability in challenging underwater environments. By integrating precision acoustic sensor arrays with software-defined communication frameworks, the solution will support real-time collaboration, navigation, and data sharing across marine robotic systems. The initiative also aims to establish scalable manufacturing capabilities within India for advanced acoustic sensors, reducing reliance on imported technologies and enhancing domestic competence in underwater sensing and communication.

Speaking on the occasion, **Shri Rajesh Kumar Pathak, Secretary, TDB**, stated, “Advanced underwater communication systems are critical for India’s maritime research, offshore infrastructure, and strategic sectors. Through this Indo–Singapore joint proposal, TDB is supporting the development and commercialization of high-performance indigenous acoustic technologies that can position India as a key player in the emerging blue economy, while strengthening international technology partnerships for mutual growth.”

Promoter of Xalten Systems Pvt. Ltd. stated, “TDB’s support enables us to accelerate the development of application-optimized acoustic antenna systems tailored for next-generation underwater robotics and communication networks. This collaboration strengthens India’s technological capabilities in marine

sensing and high-data-rate underwater communication.”

The project aligns with TDB’s mandate to facilitate commercialization of indigenous technologies developed through industry-led R&D and strategic collaborations. By supporting high-performance underwater communication systems, TDB continues to promote technology translation, maritime innovation, and self-reliance in critical ocean technologies, contributing to India’s expanding role in the global blue economy.



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