Next-Gen Autonomous Coral Reef Explorer

Breif Background

Coral reefs, vital for ecological, economic, and cultural sustainability, face severe threats from climate change, pollution, and human activity. Traditional diver-based monitoring is limited by risk, time, depth, and GPS-denied conditions, making accurate, large-scale reef assessment challenging.

Application Sectors

- underwater surveillance,
- Marine and Environmental Conservation

TRL  **4**

Tech/Prod. Summary

Next-Gen Autonomous Coral Reef Explorer is an Underwater Remote operating Vehicle (ROV) navigates GPS-denied environments to collect real-time ecological data for non-invasive coral reef inspection, biodiversity assessment, and marine conservation, leveraging lightweight composites, advanced sensors, and intelligent navigation to reduce human risk, and support ecosystem monitoring

Tech/ Product Description

This Product integrates advanced sensors, leak detection, and sensor fusion algorithms to enable precise 3D mapping, real-time obstacle detection, coral health assessment, biodiversity monitoring, and water quality evaluation in GPS-denied environments. Its modular design and autonomous navigation reduce human intervention while ensuring high-accuracy ecological data collection for marine research, conservation, and offshore applications

Market Potential

Autonomous Underwater Vehicle (AUV) Market: USD 1.3 billion in 2024 → USD 5.54 billion by 2032.
Underwater Robotics Market: USD 4.7 billion in 2024 → USD 11.9 billion by 2033.

Impact - SDG: SDG 14 - Life Below Water

Value Proposition

- Vision and SLAM assisted Autonomous and Accurate Monitoring
- Modular and Adaptable for marine ecology studies, coral restoration monitoring, coastal management, and underwater infrastructure inspection