

Clareville High School - ROV Sagona

- **Team:** Cougar Robotics Incorporated, student-led.
- **Purpose:** Developed ROV Sagona for global aquatic challenges.
- **Design Process:** Utilized a six-step design approach.
- **Objectives:** Address invasive species detection, shipwreck surveys, and CO₂ measurement.
- **Framework:** Lightweight, modular aluminum frame.
- **Propulsion:** Four SeaBotix BTD-150 thrusters for advanced maneuverability.
- **Camera System:** High-resolution for underwater navigation and task execution.
- **Tools:** Modular tools - Dugong (water sampling) and Bullet Shrimp (connector handling).
- **Safety Protocols:** Strict adherence to safety standards and use of PPE.
- **Budget:** Project completed under \$17,790 through local sponsorship and reused materials.
- **Outcome:** Project fosters collaboration and technical skills, aiming for positive ocean quality solutions; won regional competition.

GEARS, Inc. - Vaquita 3.0

- **Team:** Nine homeschooled students from Montgomery, Alabama.
- **Focus:** Innovative engineering addressing global ecological issues.
- **Project:** Development of the Vaquita 3.0 for MATE Ranger Class ROV Competition.
- **Structure:** Lightweight PVC frame housing multiple components.
- **Key Features:** Six Blue Robotics thrusters, specialized claw, high-definition camera.
- **Design Process:** Emphasis on iterations for efficiency and transportability.
- **Electronics:** Managed through a Raspberry Pi with leak detection systems.
- **Budget:** \$12,000, supported by fundraising exceeding \$14,000.
- **Safety:** Rigorous training and protocols ensure member and equipment safety.
- **Conclusion:** Showcase of teamwork and problem-solving to address environmental challenges.

RN30 Fukien Secondary School - Lobsta ROV

- **Team:** 30-member student-led robotics company in Hong Kong.
- **Goal:** Develop Lobsta ROV for MATE competition, focusing on ecological monitoring.
- **Design Focus:** Modularity and serviceability, enhancing buoyancy and quick-release.
- **Project Management:** Weekly meetings promote collaboration and communication.
- **Safety Protocols:** Strict adherence to safety during all phases.
- **Budget Management:** Emphasis on reusing components for affordability.
- **Conclusion:** Holistic approach to robotics, fostering innovation and ecological responsibility.

RN10 Foy H Moody High School - TR5-Stingray 2.0

- **Team:** Aquabot Technicians, ten students specializing in engineering.
- **Focus:** Address ecological challenges with an advanced ROV.

- **Design Enhancements:** Improved reliability, advanced functionalities, buoyancy engine.
- **Propulsion:** Six Blue Robotics T200 thrusters for optimal control.
- **Project Management:** Collaboration and critical thinking to resolve challenges.
- **Safety:** Emphasized through rigorous protocols and training.
- **Budget:** Resourcefulness in reusing components to minimize costs.
- **Conclusion:** Commitment to engineering excellence and environmental stewardship.

RN38 YoILabs - Leviathan ROV Mark I

- **Team:** Bangalore BullSharks.
- **Design Focus:** Speed, stability, versatility with modular PVC frame.
- **Project Management:** Clearly defined roles and comprehensive development schedules.
- **Innovative Solutions:** Modular design for easy repairs and safety mechanisms.
- **Budget Overview:** Emphasis on resource reuse and fundraising efforts.
- **Conclusion:** Commitment to engineering excellence and environmental sustainability.

RN21 Hawaii Preparatory Academy - Ulua

- **Team:** Mana Robotics, 14 skilled engineers.
- **Focus:** Create a modular, durable underwater robot for marine tasks.
- **Project Management:** Centralized communication and task delegation.
- **Design Features:** 3D-printed components, recyclable materials.
- **Safety Protocols:** Emphasized during assembly and testing.
- **Budget Analysis:** Supported by local sponsorships and fundraising.
- **Conclusion:** Commitment to innovation and community engagement.

RN19 Hackley School - OCTO

- **Team:** Whirlpool Robotics, ten students focused on underwater exploration.
- **Design Focus:** Functionality, modularity, environmental considerations.
- **Project Management:** Defined roles and collaborative structure for efficiency.
- **Innovative Practices:** Adjusting thruster configurations and reusing components.
- **Safety Protocols:** Established to ensure team safety during operations.
- **Budget Analysis:** Discipline in financial management.
- **Conclusion:** Collaborative efforts towards effective underwater robotics.

RN17 Unaffiliated - Coral Crusaders - Dragonfly

- **Team:** Based in Redmond, WA.
- **Design Focus:** Effective vehicle for underwater missions.
- **Features:** Humidity sensor for emergency shutdown, thruster guards for safety.
- **Budget:** Total cost of \$3,984.74, modular design for flexible mounting.
- **Conclusion:** Prioritization of safety and performance in design.

RN09 Holy Heart of Mary High School - CAPTAIN

- **Team:** HEART Innovators, 14 engineering students.
- **Focus:** Marine challenges through innovative underwater technology.
- **Design Features:** Anodized aluminum frame, dual-camera system.
- **Project Management:** Iterative design process and safety protocols.
- **Budget Management:** Efficient use of resources to support project goals.
- **Conclusion:** Commitment to engineering excellence and community collaboration.