

Reef Explorer II (Rex II) Remotely Operated/Autonomous Underwater Vehicle

MIT Sea Grant AUV Lab

Dedicated to the development and application of autonomous underwater vehicles since 1989, MIT Sea Grant's AUV Lab is a leading developer of advanced unmanned marine robots.

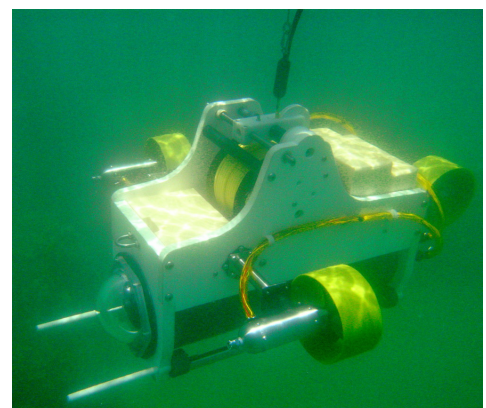
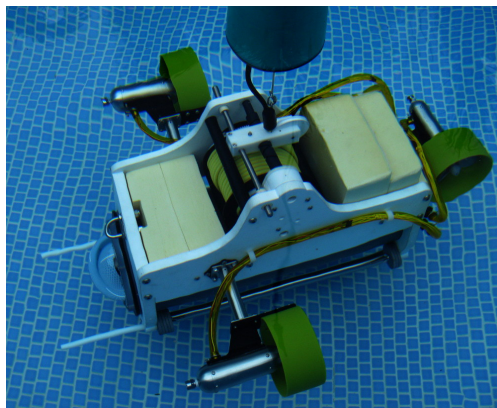
Because our vehicles can function without tethers, cables, or remote control, they have a multitude of applications in oceanography, environmental monitoring, and underwater resource studies.

The laboratory also serves as a training ground for graduate and undergraduate students, visiting engineers, and scientists, from around the world, who both learn from and contribute to the Lab's current research activities.

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About Rex II

Rex II is an underwater vehicle that provides live video and sensor data to a remote operator. It incorporates the mobility of traditional AUV designs with the live control and feedback of ROVs. An automatically managed tether connects the vehicle to a small surface float with radio communication and GPS. This design, inherited from the preceding "Reef Explorer," creates a fast data connection between the vehicle and operator, and gives accurate navigation information. The operator can be near the vehicle, or connect over the Internet.

In spring of 2009, Rex II was sent to Oahu, Hawaii for ocean field tests. It captured many hours of video and images over several missions conducted at reefs, sandbars, harbors, and deep channels. Many different forms of sea life, such as fish, turtles, invertebrates, plants, and corals were recorded.

Specifications

Rex II is well suited to exploration, inspection, and data collection in coastal or inland waters. Top speed is 0.5 m/s, maximum depth is 20 m, and the total weight is 50 kg. It is inexpensive, small, and can be deployed from shore or over the side of a boat. Operation with a joystick can be learned in just a few minutes. Additional payloads may be carried inside a dry housing or externally on the frame. On one battery charge, the vehicle can run for eight hours, covering 15 km.

