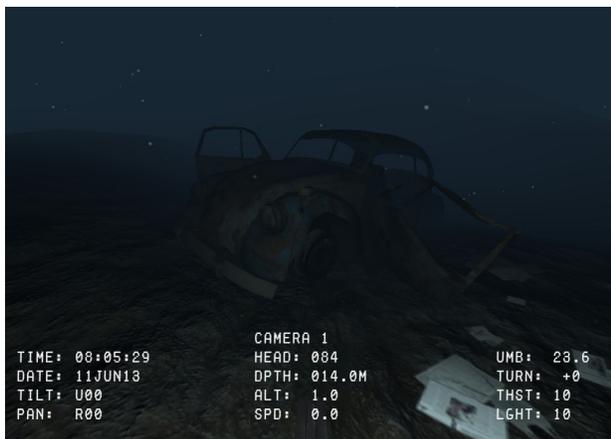


## ROVsim<sup>2</sup> Pro

*ROV training simulator for mini through medium inspection class ROVs*

Designed specifically to train near shore, coastal and inland marine operations, ROVsim<sup>2</sup> Pro is a complete undersea ROV training system for mini through medium inspection class ROV operators and trainees.

ROVsim<sup>2</sup> Pro puts control of virtually every facet of the simulation in your hands. You can adjust the ROV's physics and dynamics, change the video overlay, enable options such as casualty simulation, and adjust the environment. With just a few clicks, the video overlay as well as physical and dynamic operating characteristics of the vehicle can be changed to simulate a wide range of ROVs. And with just a few more clicks, the environment can be changed from clear and tranquil to zero visibility with dangerous currents. *No other ROV simulator on the market offers this much flexibility at this price point.*



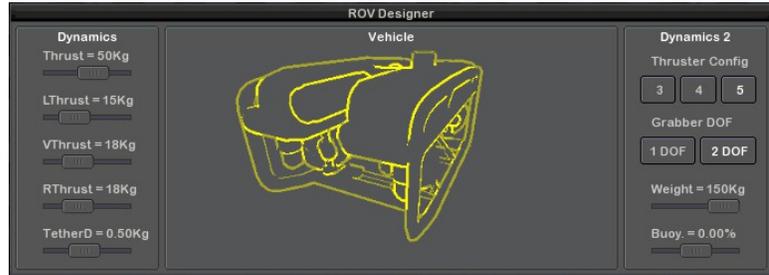
### Features:

- *Mini Through medium inspection class ROV simulator.*
- *Integrated scanning SONAR simulator.*
- *Integrated instructor's remote control of casualties, environment, etc.*
- *Eleven missions, including three new Search and Rescue missions.*
- *A variety of new ROV tools including a 1 or 2 DOF manipulator, suction collector, and laser measuring device.*
- *Full serial communications (RS 232) support so the simulator can be integrated into custom control consoles and send data to external devices such as chart plotters and instrument displays.*
- *Extended support for Windows 64 bit operating systems.*

## ROV Designer

ROV Dynamics are adjusted by moving the horizontal sliders left or right. By using these adjustments you can use ROVsim<sup>2</sup> Pro to simulate a wide range of vehicle and thruster arrangements. Thrust adjusts vehicle forward or reverse power. L-thrust adjusts vehicle sideways power left or right.

V-thrust adjusts vehicle power up and down. R-thrust adjusts vehicle power, rotating left or right. When the exact thruster characteristics of a vehicle are not known, a good starting point is to use the total known thrust for all thrusters in your ROV divided by the number of thrusters and apply that value to all thruster settings equally.



## Settings

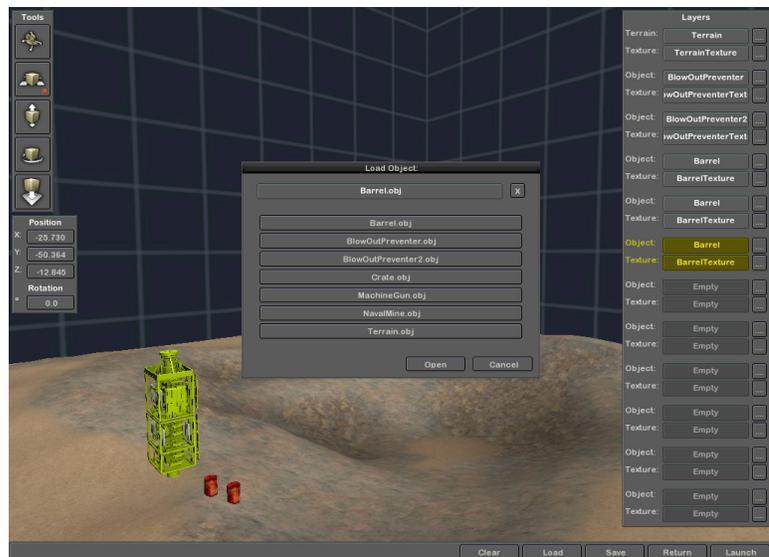
The Environment settings allow you to change the mission Visibility (turbidity), Current Direction, Current Speed and Surge. Surge simulates the cyclical motion of waves in shallow water. The Options settings allow you to turn on various optional features. When Casualties are turned on, ROVsim<sup>2</sup> Pro will simulate various equipment failures in response to hard collisions and excessive pull on the umbilical.

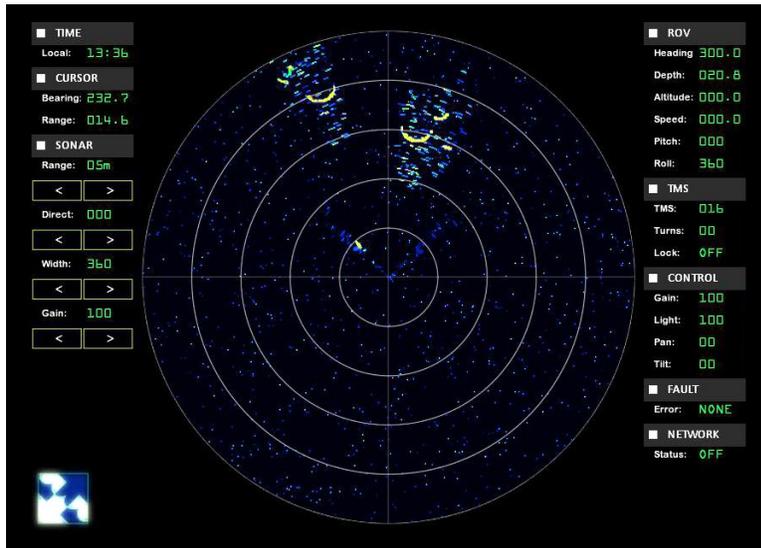


The Video Overlay panel allows you to choose from a list of available configurations. This way ROVsim<sup>2</sup> Pro may be used to simulate a number of manufacturers' systems. Additional overlay configurations as well as custom configurations may be added.

## Custom Mission Designer

Using the mission editor you are able to create a new custom mission environment or launch a previously created one. Design your own mission by importing your own models and textures or build one using the supplied terrain, models and textures. Models that are imported can be moved, rotated or "dropped" on to the terrain's surface either interactively or by entering a position on the keyboard. Custom Mission Definition Files can even be created with a text editor or an external application. The Custom Mission Designer supports 3D models in .OBJ format and textures in .PNG or .JPG formats.





## Sonar

The included Scanning Sonar Simulator works with all ROVsim<sup>2</sup> Pro missions as well as any custom mission you may design in the Custom Mission Designer. The sonar simulator is so accurate, it can even pick up small contacts, such as the ROV tether, fish, as well as details of sonar targets, such as holes and bumps. The sonar display includes a full instrument display showing status of the cameras, heading, depth, altitude, speed, etc.

## Instructor Remote Control

The mission environment and ROV casualties can be controlled remotely from a keypad, laptop or *even a smartphone or tablet*. The instructor has complete control over vehicle casualties, such as video and power failures, as well as the mission environments visibility and currents. With a few simple clicks, the instructor can disable the student's video camera, simulate a variety of thruster casualties and alter the environment's currents, thus creating a dynamic learning environment with infinite possibilities and challenges.



## About Marine Simulation

In the field of sub-sea simulation, Marine Simulation's ROVsim family of Remotely Operated Vehicle (ROV) simulators has set the standard for cost effective, physics accurate and visually stunning undersea simulation systems. Our background includes nearly 30 years experience in undersea research, maritime operations and software development. From portable solutions for near-shore mini ROV operators to high end working class ROV operations at offshore drilling facilities, there is a ROVsim product to meet your specific requirements. Our users span the globe, ROVsim products are in use in 20 countries worldwide and by over 100 training and educational institutions.

## **Included Missions:**

### **Swimming Pool**

**Level of difficulty: 1**

Background: Virtually every novice ROV pilot's first flight takes place in a swimming pool, so here's your opportunity to fly your ROV in a virtual pool.

Objective: The primary goal is to learn the basics of operating the ROV and maneuvering around obstacles. Fly around the pool and become familiar with the various objects in the water, attempt to fly under the milk crate "bridges" and move the floating tennis balls.

### **Obstacle Course**

**Level of difficulty: 2**

Background: A three dimensional maze of caves, tunnels and obstacles awaits the pilot to explore.

Objective: This mission is intended to challenge the pilot to navigate tight spaces with confusing turns and obstacles. Enter each area, navigating carefully being sure not to snag the ROV's tether or hit any obstacle. Upon completing this mission, draw a map of the area explored and obstacles encountered.

### **Water Tank Inspection**

**Level of difficulty: 1**

Background: The city's municipal water storage system is in dire need of a visual inspection.

Objective: Your task is to take a full visual survey of the interior of the water tank, noting any damage, rust or debris. Take photos of areas of note, and document their location in a schematic drawing. You should also avoid hitting any part of the tank, disturbing the sediments, and snagging the ROV's tether.

### **Municipal Sewer Inspection**

**Level of difficulty: 3**

Background: A section of the city's municipal sewer system is in dire need of a visual inspection. This section has a main trunk that leads down to two branch sewer canals. This particular section is known to be constructed of both damaged brick and reinforced concrete.

Objective: Your task is to take a full visual survey of the interior of the sewer system, noting any damage, blockage or debris. Take photos of areas of note, and document their location in a schematic drawing. You should also avoid hitting any part of the sewer, disturbing the sediments, and snagging the ROV's tether.

### **Harbor Inspection**

**Level of difficulty: 3**

Background: A foreign fishing vessel was damaged while at sea and is towed to port to effect repairs. Her crews' behavior is considered suspicious and the Captain of the Port has ordered a full inspection of the vessel's bottom as well as an accurate survey of the surrounding area.

Objectives: Inspect the underside of the fishing vessel for damage, photographing any damage and documenting the location where it is found. Survey the areas surrounding the vessel and pier while being on the look out for anything

that could be considered suspicious. Collect samples if possible and bring them to the collecting basket on the pier aft of the vessel.

Notes: In this mission the pilot can grab, carry and move the duffle bags found surrounding the fishing vessel. Maneuvering the vehicle changes to simulate the additional weight and movement of the duffle bag after it's been lifted. The fishing vessel's props can also be rotated with the ROV's manipulator claw.

## Ship hull inspection

### Level of difficulty: 3

Background: A derelict oil tanker is brought into port, the owners aren't certain whether they'll scrap it or try to fix and refit it for sea. The hull has a number of breaches from collisions that need to be surveyed and inspected. It is also suspected that terrorists may have planted limpet mines along the hull.

Objectives: Inspect the underside of the vessel for damage, photographing any damage and documenting the location where it is found. Survey the areas surrounding the vessel and pier while being on the look out for anything that could be considered suspicious.

Notes: In this mission there are a number of challenges for the pilot to explore, from extensive hull damage on the ship, to a debris field littered with hazardous materials, to a dangerous limpet mine attached to the hull. For help in finding the limpet mine, press the "Z" key for a heads up display showing the direction and distance to it. Be sure to head West of the ship, but watch out for sharks!

## Crime Scene Investigation

### Level of difficulty: 3

Background: An SUV was reported to have gone off a highway overpass and local police have tasked you with finding the vehicle, victim and any relevant evidence. This area is also the suspected area of a previous vehicle accident where the vehicle was never found.

Objective: Locate the lost SUV, occupant(s), and any other relevant vehicles and evidence. Survey the submarine terrain surrounding the bridge and prepare a map of the area.

Note: In this mission the pilot can move the SUV's door, and because of the ROV's small size, maneuver the ROV inside the SUV to look for evidence. The drowning victim can also be moved by the ROV.

## Antarctic Fauna Survey

### Level of difficulty: 3

Background: Your vehicle has been launched beneath 3 meters of ocean ice off the Antarctic continent to identify, catalog and collect samples of the flora and fauna.

Objectives: Survey the submarine terrain and all varieties of flora and fauna encountered. Photograph, document and collect marine samples using the vacuum collector (activated by pressing the "Z" key). Accurately navigate the area surrounding the elevator and create a chart of the bottom terrain and ice.

## Lake Search and Rescue

### Level of difficulty: 5

Background: A swimmer has been reported missing and presumed drowned in the lake.

Objectives: Locate the drowned swimmer as quickly as possible. Investigate all objects of interest that may appear on Sonar. Conduct a survey of the bottom and create a map of bottom objects for future reference.

Note: Use the keyboard's "Z" key to display the relative bearing and range to the victim's last reported position.

## **Canal Search and Rescue**

**Level of difficulty:** 5

Background: A swimmer has been reported missing and presumed drowned in the canal.

Objectives: Locate the drowned swimmer as quickly as possible. Investigate all objects of interest that may appear on Sonar. Conduct a survey of the bottom and create a map of bottom objects for future reference.

Note: Use the keyboard's "Z" key to display the relative bearing and range to the victim's last reported position.

## **River Search and Rescue**

**Level of difficulty:** 5

Background: A swimmer has been reported missing and presumed drowned in the lake.

Objectives: Locate the drowned swimmer as quickly as possible. Investigate all objects of interest that may appear on Sonar. Conduct a survey of the bottom and create a map of bottom objects for future reference.

Note: Use the keyboard's "Z" key to display the relative bearing and range to the victim's last reported position.

## Specifications

### ROV simulator:

- Integrated scanning Sonar simulator
- Remote Instructor Control
- Tether Management System
- Vehicle pitch control
- Two cameras on ROV
- Expanded Custom Mission Designer
- Vehicle dynamics editor
- Current and visibility editor
- Adjustable sea-state, surge and current
- Casualty simulation
- Windows 7 (32 bit, 64 bit optional)

### Eleven Missions:

- Swimming pool
- Obstacle course
- Municipal sewer
- Water tank
- Harbor inspection
- Ship hull inspection
- Crime investigation
- Antarctic fauna survey
- Lake SAR
- Canal SAR
- River SAR

### Scanning Sonar:

- Range controls (5 to 75 meters)
- Beam width (45 to 360 degrees) and direction (0 to 360 degrees) controls
- Variable gain (10 to 100%)

### Instructor's Remote Control

Environment (current, visibility, etc.) and casualties can be controlled with a separate USB keypad, computer or using a smart phone or tablet.

### Eight included video overlays:

- Ageotec
- 4 Custom Overlays
- SeaBotix
- SeaEye Falcon
- GNOM

### Included Tools:

- 1 or 2 DOF manipulator
- Laser measuring device
- Suction collector

### Serial Data Output:

Vehicle data (position, heading, speed, depth and altitude) are transmitted as NMEA 0183 text strings from the software via RS232 serial communications.

### Hand Controller Support

Supports Microsoft HID compliant joysticks, custom hand controllers, and serial controllers using a custom interface.

### Minimum system requirements:

- Microsoft Windows 32 bit Operating System
- i5 CPU or equivalent
- 2 GB RAM
- 3D performance oriented graphics card with a minimum of 1 GB video RAM
- Monitor capable of 1680×945 pixels\*
- Joystick, gamepad, or hand controller
- (\*ROVsim<sup>2</sup> Pro can be run on either a single or dual monitors)

### Recommended system and options:

- Windows 64 bit Operating System
- Intel Core i7 Processor
- 6 GB RAM
- High performance 3D oriented graphics card with 2 GB video RAM
- Two monitors capable of displaying 1024×768 pixels. (ROVsim<sup>2</sup> Pro can be run on either a single or dual monitors)
- Custom ROV hand controller
- USB Keypad, Smart Phone or Tablet for remote instructor control
- External NMEA 0183 instruments, chart plotter, etc.

Visit us at:

<http://www.marinesimulation.com>