

Engineering & Communication: Engineering Evaluation

School name and # AS IT APPEARS ON THE OFFICIAL LIST:

Judge's name:

1 0 = Yes (1) or No (0) 2 1 0 = 2: Excellent, 1: Good, 0: Poor or missing

SCORE

Teamwork/Presentation

18 pts max

Company was prepared for the presentation	1 0
Presentation was thought through, organized, and articulate	2 1 0
Presentation covered the design and building process	2 1 0
Presentation addressed possible safety issues	2 1 0
Presentation highlighted design innovations/creative ideas	2 1 0
Company demonstrates an understanding of the ROV systems, operation, and the science behind them	3 2 1 0
Each member participated and understands the systems and operations	2 1 0
Role of each member of the company is acknowledged during the presentation	1 0
Members demonstrated they encountered challenges with determination and resolve as well as with a sense of humor	2 1 0
Company demonstrates an understanding of the role that ROVs play in the mission theme	1 0

Overall Design and Workmanship

13 pts max

Ready for the water	1 0
Been tested prior to the event	2 1 0
<i>Note: Two points for entire vehicle testing prior to event; 1 point for component testing, but not integrated vehicle</i>	
Company developed a safety and/or vehicle checklist or protocol	1 0
Built according to the competition safety requirements and has passed the safety inspection (inspection card presented to judges)	2 1 0
<i>Note: One point given for presentation of a SIGNED safety checklist</i>	
Visually displays warning labels and safeguards	1 0
Meets competition guidelines for construction (material, non-hazardous materials, etc.)	2 1 0
Components easy to access for maintenance & troubleshooting	2 1 0
Built to accomplish mission	2 1 0

Systems Design and Operation

Overall Vehicle System

13 pts max

Company built the systems "from scratch" or using individual commercial components. (Score this item by adding one point for each sub-system built in this manner)	7 6 5 4 3 2 1
Safety is increased with design innovations	2 1 0
Cost is decreased with design modifications	2 1 0
Functionality is increased with design or modifications	2 1 0

Control and Electrical System

6 pts max

Control System is thought through and designed logically	1 0
Components logically and neatly incorporated	1 0
Fuse(s) in place on the positive side	1 0
Computer or Manual Controllers (Score one set)	
<u>Computer</u> - software code is thought thru	1 0
- designed by students	1 0
- company has a good command of s/w flow	1 0
OR	
<u>Manual</u> - switches laid out intuitively	1 0
- switches are clearly labeled	1 0
- students are able to manipulate switches easily	1 0

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Propulsion

5 pts max

- Thrusters are securely attached
- Thrusters do not obstruct water flow
- Thrusters are waterproofed and protected
- Appropriate size and number of thrusters to accomplish the mission

1 0
 1 0
 1 0
 2 1 0

Buoyancy and Ballast

4 pts max

- Vehicle has buoyancy/ballast system
- System takes missions into account
- Buoyancy/ballast system demonstrates application of knowledge and skills

1 0
 1 0
 2 1 0

Sensors

6 pts max

- Cameras are suited to mission objectives (i.e., waterproofed, no obstructions to view)
- Sensors are appropriate to accomplish mission tasks
- Sensors demonstrate creativity, unique features, and application of knowledge and skills

2 1 0
 2 1 0
 2 1 0

Payload Tools

6 pts max

- Payload tools are appropriate for accomplishing the mission
- Single payload tool has multiple uses
- Payload tools demonstrate creativity, unique features, and application of knowledge and skills

2 1 0
 2 1 0
 2 1 0

Tether

3 pts max

- Tether is securely attached to and appropriately positioned on the ROV
- Tether is neatly bundled and protected
- Company developed tether management protocol

1 0
 1 0
 1 0

Originality

4 pts max

- Contains original concepts and unique designs in the vehicle
- Company designed and completed actual construction of the ROV

2 1 0
 2 1 0

Budget

2 pts max

- Company describes how budget was developed and adhered to during project
- Companies, individuals who contributed funds, equipment, and/or technical/moral support are acknowledged

1 0
 1 0

Engineering Evaluation Score:

Discretionary Points

3 pts max

- Bonus points for a job well done

3 2 1

Penalty Points

-5 pts max

- Mentor, instructor, etc. exercised more than advisory role
- Overuse of commercial, off-the-shelf systems

-3 -2 -1
 -2 -1

Engineering Evaluation Total Score:

Comments: