College of Engineering Department of **Mechanical & Industrial Engineering**

College of Engineering School of Electrical Engineering & Computer Science

To Predict ► To Design ► To Perform

ME, ECE Capstone Design Programs



Team #35: Subaquatic ROV

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PROJECT OBJECTIVES

- Create a proof of concept design for project • sponsor, Patrick Lalev
- ٠ Produce a working underwater ROV that can complete the following:
 - Full Range of Motion
 - Retrieve Lost Golf Balls
 - Provide visual feedback

MANUFACTURING/ASSEMBLY





C&C Frame

Clamps

Welded Housing Thruster Mounts Epoxied Electronic Connectors

Thruster Power

Thrust vs Pulse Width Modulation (Mean Cl) 4 2 0 -8 1200 1100 1300 1400 1500 1600 1700 1800 1900 Thruster Test Device Pulse Width Modulation (PWM)

Testing for thruster strength performed in a tub attached to scale ٠

• After analysis, thrusters performed close to manufacturer strengths

ASSEMBLED PROTOTYPE







Concept

Generation

Initial Testing and

Programming

February

September

Organize Meetings October

January

Beginning

Fabrication

and Roles

TESTING AND VALIDATION

	Results of Full System Tests Average Output Thrusts per Thruster (lbf)							
Down	Т	Up	Planar (Forward & Reverse)			Strafe (lbf)		
9.	83	7.49				3.7		
Other Characteristics								
Battery Lif (min)		Operating Speed (ft/s)	Rotational Speed (rev/s)		Collection Rate (ball/min)	Collection Rate	1 Dive= 5 min	
34.	75	1.65	().39	1.29	6.43		
Measurable Specification Goals (x)								
Thrust (lbf) Battery Li		ife (min) M		obility (ft/s)	Retrieval	Rate (ball/min)		
	4 x ≥ 6		: 60		x≥1		x≥1	

the LSU Golf Course to test collection Numbers displayed are an average of 7 test runs

Golf bal	l coll	ection	

Video feedback

ROV During Pond Test

ROV During Pool Test

Adviser: Dr. Warren Waggenspack

PROJECT TIMELINE

November

Finalize

Design

March

Testing of Full

Prototype

CONCLUSION

Traversing water with full range of motion

The deliverable meets all requirements by:

Prototype

Final Proposal:

Order Components

December

Product/Delive

Finalize

to Sponsor

April