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EECE Students' First Submersible Dive Voted a Complete Success

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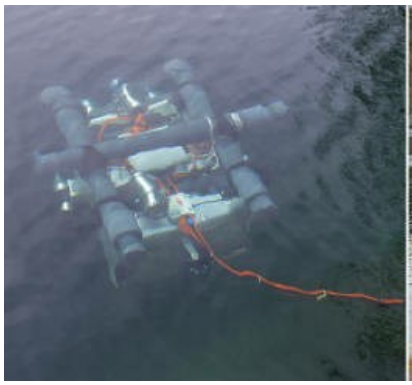
EECE BEng Final Year project Students Oli McAfee, Tom Milton and Adam Clough have successfully deployed their remotely operated (submersible) vehicle (ROV) into the cold waters of a flooded quarry near Tamworth. The culmination of many months of hard work, the ROV was piloted to depths of over 17m and used to identify a range of underwater structures and wildlife whilst being controlled from an operator station located on the quarry's edge.

The ROV out of water:



Each student was responsible for producing his own subsystem as part of the Schools BEng Project requirements. The projects ranged from developing the human-machine interface for presenting underwater video images from the two onboard cameras and navigating the ROV with an Xbox gamepad, to an innovative motorised, weight-bearing X-Y carriage mounted within the ROV chassis. This subsystem was not only capable of adjusting the trim of the ROV by responding in real time to external perturbations, but could also be used in conjunction with the vehicle's main thrusters to pitch the vehicle down and up during dive and ascent.

The team:

After extensive testing in the School's water tank, the student team's supervisors, HIT Team Director Prof. Bob Stone and School Technical Manager Andy Dunn, together with research technicians Alan Yates and Donna Johnson, gave the "all clear" for the ROV to be taken out for its first dive in a real-world setting. Unfortunately, due to the recent extreme weather, it was not possible to go ahead with the sea trial of the ROV as originally planned, as the team's Plymouth-based marine colleagues had advised that underwater visibility was zero up to 2.5 miles offshore and that the situation was not likely to improve for some time.

Consequently, it was decided to approach the owner of a Tamworth-based National Inland Dive Site at a flooded quarry in Dosthill, which has been operating since 1958 **(http://www.divedozzi.com ((http://www.divedozzi.com)**). The School had used this facility for underwater research in the past and the owner, Ian Forster, very kindly agreed to open the site especially for the students and provide support on the day at no cost. The facility is very impressive and, as well as water-side accommodation and power sources for the team, the dive site is host to a range of underwater "targets", including an abandoned Land Rover and a partially-immersed ex-Royal Navy 4.5-inch Mark 8 gun turret! During the course of the dives, PhD student Chris Bibb used the HIT Team's Quadcopter to capture some very impressive aerial footage of the ROV in action.

The ROV in action:

All three students (not to mention the accompanying staff and researchers) were highly satisfied with the outcome of the day. The ROV performed flawlessly and the students were even able to free the vehicle from an umbilical snag around the cable attached to a locator buoy – something even skilled North Sea ROV pilots find problematic! The team is now hoping to dive the ROV onto the wreck of the scuttled ex-Royal Navy Leander Class Frigate HMS Scylla, off the Cornish coast in early June when, all being well, the at-sea conditions should be more accommodating.

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