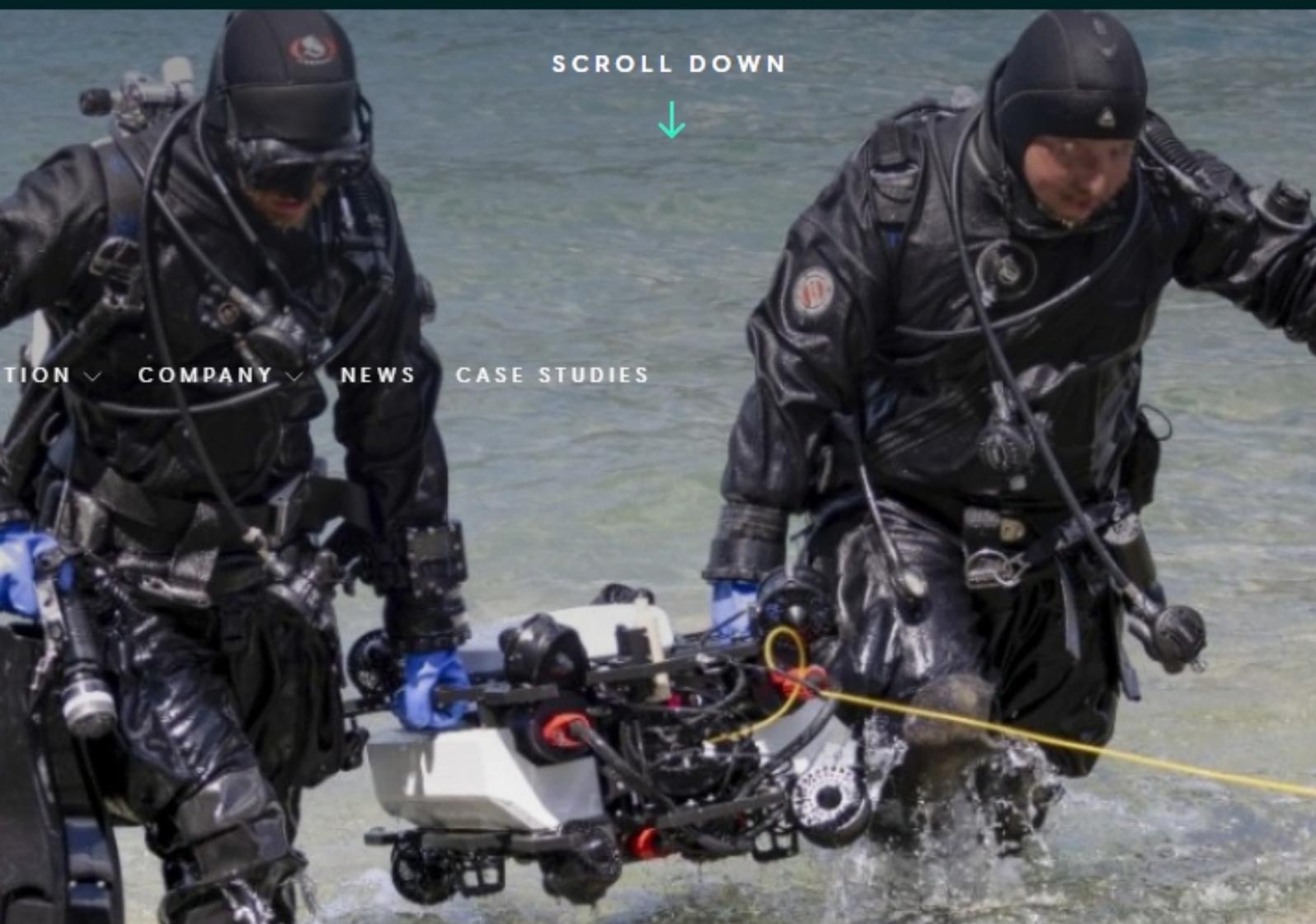


# Explosive Ordnance Disposal (EOD)

EOD, the Command Explosive Ordnance Disposal and Demining is using our ROV prototype (remotely operated vehicle) for inspection of the lakes and rivers in order to speed up the ammunition search process and to support them during the destruction process.



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## PROBLEM

In target areas and dumping sites of Swiss waters, over 8,000 tonnes in form of unexploded ordnances and ammunition remnants are still lying underwater. In the North Sea and Baltic Sea region alone, munitions residues are estimated at over 1.6 tonnes. Finding and recovering these munitions is not only a challenge for humans, but also dangerous and time-consuming, as it is often a repetitive activity.

A normal day for a dive starts with a lot of preparation of the equipment and the dive route based on the state of environment. In addition, the state of health must be good in order to dive. Once the divers are dressed and prepared, they will go down together and dive from dive sketches or draw their own. As soon as the divers find ammunition, it is marked on their sketch or a buoy is set if necessary and available. All this only works when visibility is good enough to see the ammunition. Even when visibility is good, the ammunition may not be detected because there is silt above it. In addition, depending on the dive depth, a large part of the dive time is spent on decompression stops. As a result, on the one hand the search is very inaccurate or even impossible, and on the other hand it is very slow and inefficient. In addition, there is always a residual risk for the diver with every dive. Especially when ammunition is collected in a solo dive to endanger only one life.

## SOLUTION

For these missions, Tethys Robotics provides a modular underwater drone platform which is equipped with a depth sensor, underwater GPS to accurately mark important points of interest, sonar for bad visibility conditions, metal detector to recognize ammunition even under silt, LEDs for lighting and a gripper, in addition to cameras that enables working at a depth of up to 300 metres so that the beds of all Swiss bodies of water can be reached. The robot is cable-bound, in order to reliably provide real-time data to the control station at the surface, from where the robot can be controlled. The system can autonomously search large areas, localize objects with high precision and operate effectively under poor visibility conditions ensuring that the EOD team could follow up on the retrieval of detected ammunition promptly.

"An important aspect of Tethys Robotics was the team's flexibility and broad knowledge. They were solution-oriented and contributed significantly to the successful completion of the mission with their expertise. Based on my experience, I would highly recommend Tethys Robotics for any project that involves underwater surveys or search. Their attention to detail, technical expertise, and innovative approach makes them a valuable partner in any endeavor", summarized by the head of the underwater EOD Team. Close cooperation will thus continue, in order to test the latest technologies in the application while at the same time driving forward research with a practical orientation.