

USV as Mobile Testbed for Developers



At MTS/IEEE OCEANS'15 in Genoa, EvoLogics presented its latest developments with a mobile demonstration kit that combines underwater LBL positioning with the company's unmanned surface vehicle, the Sonobot. The company's experts showcased the capabilities of EvoLogics LBL (Long Baseline) positioning and communication system and successfully rose to the challenge of quickly and cost-efficiently deploying and setting up the equipment, common for live demos at industry events.

The new solution was to simplify logistics and have the team and spectators stay on-shore, instead incorporating the Sonobot USV into the demonstration setup as a mobile node for LBL calibration and a target for LBL positioning. The Sonobot, primarily a platform for hydrographic surveys, is equipped with accurate DGPS for precise positioning and a WLAN link to the control station on shore. Moreover, the USV was designed to be assembled within minutes and requires minimum launch and recovery efforts - a benefit for time-sensitive tasks like testing and demonstration.

For sessions in Genoa the Sonobot was interfaced with a towed EvoLogics modem, configured as transponder. The on-shore PC ran EvoLogics SiNAPS navigation and positioning software and connected to the mobile transponder over the Sonobot's WLAN link. Four EvoLogics S2C acoustic modems in LBL-beacon configuration were deployed as baseline nodes around the perimeter of the demonstration site. Remotely controlled Sonobot was first used to calibrate the positioning system, establishing coordinates of the baseline nodes in absolute coordinates, and then as target for demonstrating the LBL system's performance, when its position was calculated and displayed by SiNAPS software on-shore. The sessions took about one hour to set up.

The results proved that a light USV is beneficial for demonstration purposes and it can be integrated into a mobile testbed for implementing new network protocols and evaluating solutions for networks with stationary and mobile nodes. EvoLogics works on integration of mobile and stationary nodes within the framework of the SUNRISE project, focusing on wireless subsea networks to enable cooperation between different underwater devices. SUNRISE, supported by the EU within the 7th Framework Programme, aims at creating a web-accessible testing infrastructure that will help researchers implement and test innovative network protocol solutions at a fraction of time and cost required today.

EvoLogics will continue working on integration of its USV with underwater communication and positioning systems, opening new opportunities for numerous applications.

Image: Deployment of Sonobot.