Partnership for Carbon Capture and Storage

Fugro GEOS, in partnership with Sonardyne, is leading a three-year, all-British project for the Energy Technologies Institute (ETI) to develop a carbon dioxide (CO2) monitoring system using marine robotics. Valued at GBP1 million in the first year, the project aims to provide assurance that CO2 stored deep below the seabed in Carbon Capture and Storage (CCS) sites is secure.

A consortium of British multi-discipline partners will examine the requirements for the Measurement, Monitoring and Verification (MMV) system. The project will result in the construction of a technology demonstrator with sea trials; a comprehensive review at the end of the three year period; and a solution to a legislative requirement to monitor potential CO2 leaks and their effect on the environment.

Using technologies already proven in the offshore and oceanographic industries, combined with new remote sensing technology, the Consortium will develop an integrated leak detection system that is capable of both wide area coverage by AUVs/ASVs (Autonomous Underwater Vehicles/ Autonomous Surface vehicles) and continuous automated monitoring of high risk areas. For these sites, the use of Sonardyne’s Automatic Leak Detection Sonar (ALDS) has been proposed. ALDS is both an active and passive sonar capable of monitoring more than one billion cubic feet of water for the smallest of leaks. The system is fully automated, offering reliable detection, rapid notification and localisation of leaks. It provides continuous 360° coverage, detecting leaks after only tens of seconds.

As the data is gathered from both ALDS, the AUVs/ASVs and other monitoring technologies, it will be relayed to shore using a combination of wireless acoustic and satellite communications and existing reservoir infrastructure acting as surface-to-shore relay stations. Sonardyne’s Autonomous Monitoring Transponders (AMTs) will form the core power, data logging and communications backbone for this data sensing and relay. AMTs autonomously acquire acoustic ranges and sensor data which is then time-stamped and logged internally for recovery via the integrated high-speed acoustic telemetry modem. This autonomy allows measurements to be made over long periods of time and a wide range of sensors for the detection of CO2 can be interfaced and integrated, providing an ultra-low power platform for up to five years’ unattended deployment.

Image: The project, commissioned and funded by the ETI, will develop a monitoring system using marine robotics and Sonardyne's ALDS to provide assurance that carbon dioxide stored in CCS sites is secure.

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