



ECA to develop 6000m water depth AUV

Written by OE Staff Wednesday, 25 January 2017 04:15

French research institute Ifremer has chosen French robotics and automation firm ECA Group to develop an ultra deep autonomous underwater vehicle (AUV) able to reach 6000m water depth.

Through the move, ECA Group will become the prime partner in the CORAL Alliance (Cooperative Off-shore Robotics ALLiance), created by Ifremer. The aim of the project is to promote innovation and competitiveness in an integrated concept, linking ocean science to marine industry.

The CORAL ALLiance is funded by Ifremer, Provence-Alpes-Côte-d'Azur Region and the EU (FEDER program). Ifremer will lead the project with engineering and research and development efforts, technical and naval means for qualification of the new system, fostering innovation and expertise on a regional, national and European level.

Ifremer will oversee the development of the new AUV vehicle and its associated equipment. Furthermore, Ifremer will develop the AUV control software system in order to meet current and future needs of scientific end users.

The AUV will be able to accomplish wide coverage acoustic mapping as well as optical inspection by hovering close to the sea floor. "The system will deploy a full range of scientific sensors in modular packages, innovating in design optimization, autonomy, payload volume and navigation capabilities. The AUV will facilitate producing accurately georeferenced, wide area, high resolution and multi parameter representations of deepwater marine environments" explains Jan Opderbecke, head of the Underwater Systems Unit, located at Ifremer facilities in Toulon. After a development period of three years, the AUV will accomplish its first dives in 2019.

"The association of long endurance survey and low altitude hovering capabilities will have high potential in various fields of application. For future commercialization by ECA Group of this AUV branded A6K, the system specifications are particularly interesting for missions such as deep sea mining survey, oil / gas pipeline inspections, rescue missions and mineral resource exploration," says Claude Cazaoulou, Director of Sales and Business Development from ECA Group Robotics Division in Toulon.

"The new vehicle will be deployed from French and international oceanographic research vessels in missions involving other deepwater intervention vehicles, starting with Ifremer's Victor 6000 ROV and Nautille manned submersible," says explains Jan Opderbecke from Ifremer.

An innovative optical communication device currently under development at Ifremer as well as hovering capabilities of the new AUV will enable real-time data exchange with other underwater vehicles. The implementation of combined exploration and intervention operations will enhance the innovation potential offered by this new system.

Furthermore, the following aspects will be developed during the new AUV project:

The compact and innovative design will be compatible with launch and recovery modes already developed by ECA Group during ESPADON project in 2016. A containerized transport solution will simplify system mobilization, reducing operational expenditures.

The design will as well benefit from ECA Group experience gathered during AUV ALISTAR 3000 developments for hovering capabilities, where high performance pipeline inspections were being deployed.

The embedded controller developed by Ifremer will be tightly coupled with the vehicle's sensor payloads and provide online re-planning and event driven autonomous mission behaviors. Onboard processing algorithms developed in cooperation with the scientific end-users will allow optimizing long-duration missions on high level, meeting well defined scientific goals. The ability to perform targeted multi-parameter (physical and chemical properties, acoustic, optic, laser scanning imagery) data acquisition will constitute a significant performance improvement over existing autonomous platforms and will allow the scientific end user to better characterize vast areas of the seafloor.

"ECA Group and Ifremer have a strong industrial relationship built over the last 30 years," says Claude Cazaoulou, at ECA Group. "We have developed projects such as EPAULARD, the very first autonomous robotic submarine capable of taking photographs at a depth of 6000m. More recently, ECA Group was strongly involved in developing HROV Ariane, a new hybrid technology which combines the ability to gather high resolution data in 2500m water depth, performing vertical inspection and intervention tasks while reducing operational expenditures, through the implementation of a ROV and AUV systems in the same architecture."