

Defense vehicles in line for new roles in survey and inspection

Toulon-based ECA has introduced two new remotely controlled vehicles for shallow water survey and inspection tasks. Inspector, an unmanned surface vehicle (USV), and the K-Ster were both developed initially for defense applications, but oil companies are interested in adaptations for offshore use.

The Inspector, which operates on the sea surface, is capable of carrying or towing a wide-ranging array of sensors. ECA is currently delivering its first consignment to the French Ministry of Defense, comprising seven 7-m (23-ft) long USVs powered by 250 hp motors.

These vehicles can travel at speeds of up to 35 knots in Sea State 3, with up to 10 hours autonomy. According to ECA's Offshore Sales Manager Thierry Copros, they are being deployed to tow targets at high speed, providing shooting practice for the Ministry's battle-ships.

The Inspector's diesel inboard stern drive motor and shallow draught (1 m [3.28 ft]) provide a high degree of maneuverability, Copros says, facilitating operations in areas normally difficult to access. Shore approaches, for instance, are difficult to manage with a standard vessel survey. The vehicle can be controlled remotely at distances up to 10 nautical mi (16 km) from the mother ship or shore-based launch pad.

Cameras within the USV masts provide 360° vision, which in the case of the current application, allows the operator to view and record the splash of missiles striking the target. Sensors, which can be towed or embedded in the vehicle, comprise typically single-beam and multi-beam echo-sounders, side-scan sonar, a magnetometer, and a sub-bottom profiler or synthetic aperture sonar. The USV also incorporates mission management software, allowing it to be programmed to survey an area autonomously by following a pre-defined route or pattern.

"We have had a very good reaction to this new vehicle from the offshore sector," says Copros. "One reason is safety. In some shallow water areas such as West Africa, there is a lot of concern for the security of staff operating close to the shore."

"Some oil companies and contractors are interested in deploying the USV for unmanned seabed mapping surveys. The operation could be supervised from any type of supply boat stationed up to 10 mi (16.1 km) away, either controlled remotely, or following a pre-defined pattern."

Another consideration is the cost of operating a standard survey vessel in a remote area. "It can be expensive to have 40 personnel onboard such a vessel. With the USV and back-up boat, however, only one or two survey staff would be needed."

ECA has proposed this solution to one major oil company. "For offshore application," Copros explains, "the main consideration would be the need to integrate or attach electronic sensors inside and underneath the vehicle. The full 35-knot transit capability would not be necessary, although the USV



The unmanned vehicle Inspector during sea trials.

would require some speed to reach the offshore survey site quickly, in order to reduce the hire costs.

"In this case a 140 hp motor would be sufficient – that was the figure in our study proposal. The motor, being diesel-driven, would provide a long period of autonomy." As for the launching operation, "this would need to be from a water depth of at least 2 m (6.56 ft) to obtain a signal for the echo-sounder."

Near-platform checks

The K-Ster is a battery-powered ROV linked to the surface for real-time control via a fiber optic cable. ECA has sold the combat version (K-Ster C) and inspection version (K-Ster I) to a navy in Asia for minefield clearing tasks.

In an offshore context, the vehicle's low weight in air (50 kg) makes it suited to short-term inspection tasks in water depths down to 300 m (984 ft), at distances up to 1,000 m (3,280 ft) from the launch site. It incorporates a patented moving tiltable head – "very useful for maintaining a good attack angle for mine killing," according to Copros – carrying a payload of up to 5 kg, including a camera, light, sonar, or other sensors.

According to Copros, discussions with offshore operators have focused on near-platform, near-surface inspection operations, regarding, for instance, umbilical connections or the area underneath an off-loading buoy.

"In certain cases some of these companies do not want to retain a large spread of ROVs on board their installations. Our vehicle only requires a fiber-optic link, so it would not occupy a lot of space on the deck. K-Ster could also be used as a side eye during work ROV operations."

ECA plans to have an operational offshore version ready for demonstration in September. "For offshore inspection tasks we could modify the payload to include better quality side-scan sonar, or whatever else is needed," Copros says. "We are also considering developing an autonomous version of this vehicle, again initially for the military market." ◉



An Inspector console.