

Case Study 147: **Unmanned Surface Vessel (USV) – ECA GROUP**

SPECIFICATIONS

Waterjets:	DJ100G (Twin)
Engines:	Steyr SE306J38 292mhp @ 3850rpm
Gearboxes:	Integrated (1:25:1)
Vessel:	9.0 m L.O.A 4.7t A.U.W 1t Payload
Performance:	35+ knots



ECA Inspector Mk2 USV

Building up its USV capabilities since 2008, ECA Group (France) delivered the first Inspector Mk2 USV to an unnamed customer in September 2015. The boat is a shallow draft rigid monohull, designed for endurance of more than 12hours at 10Knots, while having the ability to sprint at 35Knots+, survive in sea state 5 and keep station accurately at speeds between zero to 25Knots.

Inspector Mk2 USV (optionally manned) is designed to form the core platform for an array of modular onboard payloads to suit a wide variety of missions including coastal surveillance, mine countermeasures, rapid environmental assessment, support for special operations forces and firefighting.

A pair of Doen DJ100G waterjets were chosen to drive this vessel to meet the requirements for high-speed performance, superior maneuverability and excellent cruising fuel economy. The integrated gearbox of DJ100G, eliminates the need for a separate marine gear and allows a perfect match between the waterjet and the 292hp Steyr engine, as well as the other nominated alternative engine options for Inspector Mk2.

The 245mm diameter, high volume axial flow impeller provides great trust across the entire speed range of this USV and exceptional cavitation margin allowing unrestricted full power application that is an essential requirement for towing mine hunting probe at low speeds.

ECA Group required Doen to supply the waterjets with a tailored control interface to suit a third party autonomous control system. Customized DJ100G waterjets were designed for this customer, each waterjet has its own fully integrated hydraulic system providing necessary control input and feedback information required for the third party independent system to control waterjets' steering and reverse in manned or unmanned (remote or autonomous) mode. The hydraulic pumps are jet mounted and driven off the main shaft.

Doen electronic control systems can also provide for direct CAN BUS interface to third party systems for USV applications. The flexible architecture of Doen's control interface provides for direct communication of control commands such as bucket and steering as well as engine throttle and gear select. In addition, system status details can be communicated to the remote system for alarm and monitoring purposes.