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# C-WORKER 7 AUTONOMOUS SURFACE VEHICLE (ASV)

## Offshore Work-Class ASV

VEHICLE CHARACTERISTICS	
Length	7.5m
Beam	2.3m
Height	6.4m (including antennas) 3.5m (mast lowered)
Draught	1.0m
Weight	4,900kg fully fuelled (not including payload)
Construction	Aluminum hull and structure
Sea state	Operations in up to and including sea state 4 Survivability up to and including sea state 5
Speed range	6 knots maximum speed 3-4 knots cruising speed
Endurance	25 days @ 2knots
Launch and recovery	Integrated lift points for standard overhead lift using slings/shackles Bespoke system for L&R via a mothership using the lift points and a bow-mounted sucker rod catch/release mechanism
Navigation aids	Halo 20+ radar: GNSS compass: solid-state compass: inertial navigation system: speed and depth transducers: class B AIS transponder: port and starboard navigation lights, all-round white light, red and white signaling light: horn: weather station
Cameras	Camera box featuring four daylight cameras and six thermal (IR) cameras, offering a full 360-degree panoramic view with no blind spots and day/night capability
Propulsion	2 x 20 kW Aziprops driving 4-bladed handed Kaplan propellers
Fuel capacity	1,170 litres (diesel)
Standard vehicle control	Mission planning (lines, waypoints, station keeping, geofencing) Direct remote control via a hand-held control unit
Optional vehicle control	Autonomous route planning with collision avoidance system
Primary communications link	5W COFDM IP mesh radio Tuneable RF channel bandwidths of 1.25 MHz to 10 MHz ~6.7km range with remote station antenna height of 3.5m Range can be increased with remote station antenna height >3.5m
Alternate communications	4G LTE cellular data connection Wi-Fi
Electrical power (DC)	2x 48V DC house battery bank 2x 12V DC engine start battery External shore power connector for shore supply charging
Electrical power (AC)	230V AC via a 3.5kw inverter/charger for payload, air conditioning system and on-board power sockets
Payload capacity	2.5m (L) x 1m (W) x 1.5m (D) moonpool in the centre of the vehicle with a payload frame that can accommodate up to 500kg of equipment (dependent on distribution and weight assessment) with 48V DC power, 230V AC power, Ethernet and serial data connections



C-Worker 7 is a robust, offshore work-class Autonomous Surface Vehicle. Designed for inspection and positioning applications, C-Worker 7 can negate the need for a ship on station or seabed anchoring.

The vehicle's 2.5m x 1m x 1.5m moonpool allows for easy integration of standard or custom payloads via an interchangeable frame. Sensors and equipment previously used for operations with C-Worker 7 include an inspection-class ROV, MBES, USBL, ADCP, and a remotely deployable winch.

C-Worker 7's endurance of up to 25 days enables it to remain on station for extended periods without the need to return for refuelling.

C-Worker 7 has proved itself capable of withstanding harsh offshore conditions, having successfully completed worldwide operations including ROV deployment and recovery, multibeam survey, and subsea positioning.

C-Worker 7's hybrid diesel-electric system powers a pair of azimuth thrusters to give a high level of maneuverability as well as the added benefits of redundancy and efficiency.

The vehicle's interchangeable moonpool frame allows for multiple combinations of payload equipment to be rapidly assembled and installed. A bespoke launch and recovery system enables the vehicle to be deployed from a support ship or dock.

C-Worker 7 is operated using the ASView control system, which enables pre-programmed missions to be set up, executed and monitored via a graphical user interface. Control modes include waypoint and line following, heading and track hold, station keeping and geofencing. The vehicle can also be operated using a bespoke hand-held remote control unit.

ASView features standard S57 navigational charts with the ability to import files such as geotiff and .dxf survey lines. Situational awareness is provided by a 360-degree camera box on the vehicle's mast featuring four daylight cameras and six thermal (IR) cameras. Live video feeds are transmitted to the remote station in real time.

C-Worker 7's operational safety is enhanced by a SIL1-assured emergency stop system and a supervision timeout feature that enables the vehicle to perform pre-programmed actions/missions following a loss of communications.

The vehicle's remote station control equipment is hand-portable and has a small form-factor enabling quick and easy set up to provide a control centre shore-side or on-board a support vessel.

Optional additions to the standard C-Worker 7 package include a payload COLREG-aware route-planning collision avoidance system, layout design and installation support, and the provision of tailored operator and maintainer training programmes. L3Harris can also provide bespoke solutions for ongoing technical support and vehicle maintenance.



#### PACKAGE INCLUDES

- C-Worker 7 with 5W COFDM IP mesh radio, 4G LTE and Wi-Fi communications links, and 360-degree daylight and thermal (IR) camera suite
- Hand-portable remote station equipment including ASView-Base station, ASView-Helm remote control unit, ASView-Bridge laptop with User Interface, antennas and associated cables
- C-Worker 7 is available for purchase or short/long-term lease arrangement

#### OPTIONAL ADDITIONS

- Customizable payload frame design and installation
- Advanced autonomy with path-planning collision avoidance system
- Satellite communications link(s)
- Tailored operator and maintainer training courses
- Post-sale maintenance and technical support contract

#### C-Worker 7 Specifications

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