SCIENTIFIC SYSTEMS

SCALABLE, AFFORDABLE AND COMBAT-CREDIBLE

www.ssci.com

VENOM sUSV

SCALABLE, AFFORDABLE AND COMBAT-CREDIBLE

VENOM sUSV is a multi-mission, 9-meter-long unmanned surface vessel, featuring a rugged High-Density Polyethylene (HDPE) hull and a 300HP outboard diesel engine. The software-defined VENOM is powered by Scientific Systems' OPTIMUS Collaborative Mission Autonomy software, which facilitates swarms of collaborative VENOMs working together to achieve mission effectiveness in communications-challenged environments. VENOM is a cost-effective, rapidly-built solution that is produced using highly scalable manufacturing processes.

VENOM is equipped with COTS cameras, featuring 360-degree coverage and EO/IR capability. A pan-tilt-zoom camera offers high pixel count imaging for detailed analysis of distant targets, supporting long-range detection and identification tasks. The USV has a sprint speed of more than 35 kts, a cruise speed of 24 kts and a range in excess of 800 nautical miles. With a payload capacity of 1,000 lb, VENOM supports various mission objectives. VENOM uses a Silvus radio and Starlink satellite terminal, to form a robust network in which uncrewed vehicles and operators seamlessly operate together. Scientific Systems' OPTIMUS Collaborative Mission Autonomy software facilitates one-to-many task execution in alignment with the commander's intent.

MISSIONS

- FORCE PROTECTION (KINETIC & NON-KINETIC)
- PERSISTENT ISR
- CONTESTED LOGISTICS
- MARITIME PATROL & SECURITY

FEATURES

RUGGED HIGH-DENSITY POLYETHYLENE (HPDE) HULL

The Tideman Marine hull is resistant to high impacts and is "sledgehammer tough." Features zero corrosion, electrolysis or delamination. Unlike fiberglass hulls, the HDPE hull does not require painting and polishing. Plus, it can be field-modified to accommodate payload mounts.

COST-EFFECTIVE & RAPIDLY SCALABLE FOR "AFFORDABLE MASS"

95% Commercial-Off-The-Shelf (COTS). Rapidly scalable plastic weld assembly lines -does not require costly molds. Highly modular sUSV "Kit" preassembled for rapid integration with hull. Manufacturing facilities have produced thousands of life-saving products across security, robotics, and maritime applications.

ACHIEVES COMMANDER'S INTENT THROUGH COOPERATIVE MISSION EXECUTION

The collaborative multi-vehicle autonomy software interprets the commander's intent and executes actions accordingly, enabling scalable swarms of uncrewed vehicles to share information amongst themselves, prioritize objectives and adapt to mission conditions.

COMMERCIALLY PROVEN AUTONOMY AND C2 USER INTERFACE

Capabilities include obstacle avoidance, following moving vessels without external aids, and executing autonomous target acquisition against maneuvering targets moving up to 30 knots. The system also provides return-to-origin capability, mission planning tools, and tracking capabilities that monitor up to 30 targets.

MULTIPLE DEPLOYMENT OPTIONS

Deployable from 40-foot containers that have sufficient space for the sUSV and field repair kit, then hoisted down from the shipping container to harborside. Alternatively deployed over land by trailer or floated out from the stern dock of an amphibious warship.

LARGE PAYLOAD CAPACITY

Highly adaptable hull design to accommodate various payloads and configurations with a generous dedicated payload capacity of 1,000 lb.

SPECIFICATIONS

DIMENSIONS	**Length Overall (LOA):** 30.8′ (9 m) **Beam:** 7.6′ **Draft:** 2.7′ **Operational Height:** 10.3′
DISPLACEMENT	**Lightship Weight:** 6,814 lb **Full Load Condition:** 9,055 lb **Payload:** 1,000 lb
HULL MATERIAL	High-density polyethylene (HDPE) Virgin, non-recycled HDPE (PE 100 or PE 300)
PROPULSION	OXE 300 HP outboard diesel engine
RADAR SENSOR	Furuno DRS4D X-Band
OPTICAL SENSORS	Fixed array of EO and IR AXIS P1455-LE cameras FLIR M364C EO/IR PTZ
COMMUNICATIONS	Silvus 4400 radio Starlink satellite terminal 900 MHz CRD for remote control up to 1km
ELECTRICAL POWE	(2) group 31M AGMs batteries (house and engine) (1) group 65 AGM battery (power steering) 12-to-24 DC-to-DC converter Inverter for 120 VAC Battery charger for 120VAC shore power
PERFORMANCE	**Cruise Speed:** 24 kts **Sprint Speed:** > 35 kts **Range:** > 800 nmi
AUTONOMY	**Flip to next page** →

MISSION-READY AUTONOMY SOFTWARE FOR OPERATIONS AT THE EDGE

Since USVs operate in contested environments with degraded communications, they require decentralized, resilient autonomy – which VENOM's autonomy stack delivers with onboard perception, system management, and intent based mission behaviors with minimal inter-vessel communication.

VENOM delivers multiple layers of autonomy: platform autonomy (per vehicle) and swarm/fleet autonomy.

PLATFORM AUTONOMY (PER VEHICLE)

Onboard autonomy for perception, navigation, and mission execution

- Real time perception and environment understanding
- Autonomous navigation in dynamic maritime conditions

SWARM/ FLEET AUTONOMY

LEVEL 1

Coordinated autonomy for multiple USVs with minimal shared communications

- Distributed tasking and role allocation
- Resilient operation through intermittent comms

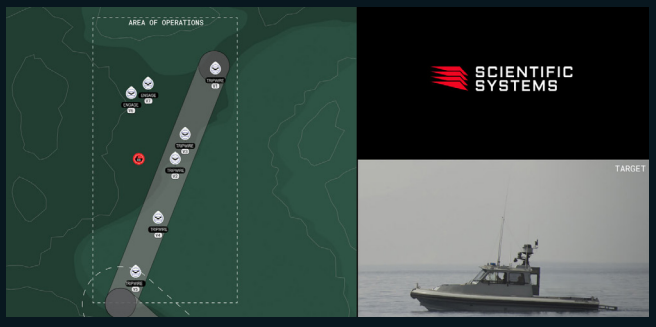
LEVEL 2

Scientific Systems' OPTIMUS collaborative mission autonomy software enables coordinated team behaviors, allowing AI-powered vessels to execute a shared mission — deploying, transiting, searching, engaging, and returning — with distributed decision-making and no reliance on persistent comms or centralized control.

- Collaborative sensing and perception fusion
- Enables coordinated missions across many USVs with real time dynamic replanning driven by Commander's Intent
- Distributed decision-making means no single point of failure. Asset loss mid-mission doesn't collapse the operation
- Platform-agnostic autonomy that has successfully executed a recent on-water test of multiple unmanned surface vessels (USVs) performing end-to-end cooperative mission activities

KEY BENEFITS OF OUR AUTONOMY

- Scales across missions, vessels, hull manufacturers, and fleet size
- Software first autonomy reduces platform cost
- Modular, quickly upgradable architecture
- Designed for degraded comms
- Low burden operator tasking and mission setup



A squadron of USVs, running Scientific Systems' OPTIMUS Collaborative Mission Autonomy software conduct operations as an autonomous, collaborative team, completing wide-area search tasks and coordinated multi-USV intercepts during a comprehensive naval mission test series.

CONTACT US: info@ssci.com | (781) 782-3200

PARTNERS: TIDEMAN MARINE · SEA MACHINES