

# 16' WAM-V<sup>®</sup> USVx



In 2013 the 16' WAM-V USVx was selected by ONR and the AUVSI Foundation as the sole platform for all competitors in the Maritime RobotX Challenge.

WAM-V (Wave Adaptive Modular Vessel) technology is uniquely suited for unmanned operation. The top deck, or payload tray, is designed to accommodate instrument and control packages in the highest position possible, free from obstruction. This is especially important for cameras, antennas and solar energy harvesting systems. Oceanographic sensors, AUVs and other instruments can be lowered from the payload tray to the ocean's surface.

The 16' WAM-V USVx can be disassembled by two people into 7 components in less than 3 minutes – reducing the footprint by 65%. She can easily be deployed from ships and small craft with limited manpower.

## Applications

- Harbor/Port Surveillance: small, lightweight package that can be the eyes and ears for security personnel.
- Research: delivery of sensor packages. Simple launching procedure from any vessel in deep or shallow water, can serve multiple missions.

- ISR: easy deployment, high maneuverability. Can be quickly disassembled, moved and re-assembled by just 2 people.
- Defense: multiple units can be deployed to provide a perimeter and swarming capabilities.
- Network: communications node for USVs and AUVs.

## Specifications

- Length: 16'
- Beam: 8'
- Payload: 350 lbs
- Propulsion: 2 x Cruise 2.0 electric outboards
- Batteries: 4 x 105 Ah Li NMC
- Max Speed: 11 knots
- Range: 100 nm at 3 knots  
30 nm at 10 knots
- Platform Weight: 400 lbs
- Draft: 6"

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# Marine Advanced Research, Inc. and the WAM-V® Technology

## A Brief History

In 2004, a small group of Silicon Valley innovators founded Marine Advanced Research. The company designed, built and launched the 100' *Proteus*, introducing the WAM-V (Wave Adaptive Modular Vessel) technology to the world.

By 2008, Marine Advanced Research recognized the emerging USV (unmanned surface vessel) market and began to produce unmanned WAM-V variants.

Fast forward to 2013 and Marine Advanced Research has introduced 12', 14', 16' and 33' WAM-V USVs. By the start of 2014, WAM-Vs will be operating in 5 different countries.

## WAM-V Characteristics and Advantages

**Wave Adaptive:** the unique elements of the WAM-V design allow the hulls to move with the waves while the center platform remains stable. The inflatable hulls act like the tires of a vehicle to absorb vibrations caused by high frequency waves. The articulation and suspension systems dissipate the medium to low frequency waves.

**Modularity:** payloads and instrument packages can be quickly switched, allowing mission-specific customization in minutes. Modular engine pods with different propulsion

systems can be swapped easily depending on mission or maintenance requirements.

**Scalability:** WAM-Vs can be built in different lengths to match specific applications. The design is well suited to quickly produce construction drawings tailored to each customer's needs.

**Stability & Maneuverability:** the 2:1 length to beam ratio along with articulation and suspensions systems make the WAM-V an exceptionally stable and seaworthy platform. Widely spaced engine pods enable a high degree of maneuverability, allowing the vessel to turn 360° within its own length.

**Helicopter-like Functionality:** a WAM-V can pick up and deliver payloads from its center structure in open ocean or in very shallow water. No need for an over-the-side crane or A-frame.

**Reduced Footprint:** WAM-Vs can be disassembled into components and packed for shipment. Alternatively, they can be designed to hydraulically, electrically or manually fold and reduce their footprint by up to 75%. This significantly lowers deployment costs.

*Proteus*, the 100' technology demonstrator, was launched in 2007 in San Francisco Bay. She sailed over 3,000 nm in the Pacific, Atlantic and Mediterranean on a good-will mission for NOAA's Marine Sanctuary Program.

