

The difficulty lies, not in the new ideas, but in escaping from the old ones which ramify... into every corner of our minds.

-John Maynard Keynes



Maritime Applied Physics Corporation

Objectives

→ **Maritime Applied Physics Corporation**

To combine advanced technologies with proven engineering and manufacturing techniques in order to bring air, land, and sea vehicles and subsystems from concept through production quickly and affordably.

→ **USV Refueling**

To design, build, test and commercialize an autonomous system capable of refueling a USV without returning to a manned host platform.

→ **Navy Opportunity Forum**

To establish relationships with prime contractors and PEOs to transition our USV unmanned fueling system into the fleet.

Mission

Maritime Applied Physics Corporation performs advanced technology development, prototyping, and production of complex mechanical, electrical, thermal, and electronic systems. The primary markets served are the defense industry and commercial organizations.

◆ Maritime Applied Physics Corporation (MAPC) was formed in order to transform the technologies that are continually emerging from a wide breadth of disciplines such as naval architecture, mechanical, electrical, aerospace, and automotive engineering, into novel prototypes and systems. Our goal is to provide a single source solution for conceptualization, design, prototyping, testing and production of these advanced systems. Our expertise in building a unique mix of scientists, engineers, naval architects, and technicians to integrate these technologies into advanced vehicles allows us to provide complete solutions from concept through production.

◆ MAPC strives to perform these tasks with a high level of quality and innovation and low overhead rates by emphasizing the following principles:

- Minimize administrative and engineering hierarchy that can stifle innovation.
- Promote the growth of employees by empowering them with substantial responsibility early in their careers while simultaneously restricting the impact of any mistakes.
- Create employee job satisfaction, retention, loyalty and technical excellence through pride in the accomplished work, professional satisfaction, and a team atmosphere of mutual trust and reliance.
- Foster exceptional levels of innovation from all employees.
- Increase employee motivation and responsibility via employee ownership of the Company.

◆ MAPC performs this work with exceptional ethical standards and a bias-free workplace.

Core Competencies

MAPC possesses a unique blend of advanced analytic design and real-world hardware fabrication capabilities. Several key areas comprise the main focus of the company:

Technology

- Proprietary seakeeping and air turbulence prediction algorithms
- Active control systems
- 3D CAD/CAM/FEA virtual modeling and simulation
- Fabrication technologies
- Robotic system command and control

Research and Development

- Advanced hullforms- SWATH, HYSWAS, hydrofoil
- Advanced air and ground vehicles
- Unmanned Surface Vessels
- Advanced battery systems

STRESS

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Services

Advanced hullforms- SWATH, HYSWAS, hydrofoil

Advanced air and ground vehicles

- Manned and unmanned (teleoperated and autonomous) systems
- Modification and re-engineering of existing vehicles
- GPS/INS based localization systems
- Wireless communications for data and vehicle control
- Hybrid air/ground and air/surface vehicles

Unmanned Surface Vessel design and fabrication

Energy Systems

- Advanced battery systems- Li-Ion, Li-Polymer
- Alternative propulsion- electric, hybrid-electric
- Compact power generation systems

Engineering services for advanced prototypes

- Program creation with government agencies
- Government-side program oversight

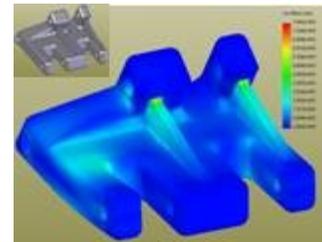
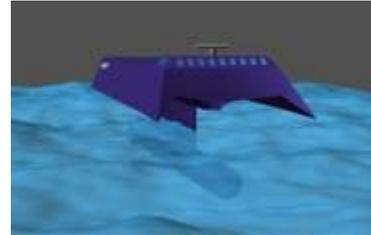
Naval Architecture

Test design, execution, and direction

- Maritime trials
- Ground vehicle testing
- Unmanned systems testing
- Scale Model fabrication and verification

Prototype Fabrication

Limited-Volume Manufacturing



Representative Projects

Located on a site steeped in the history of Liberty Ship fabrication during World War II, MAPC constantly strives to honor the memory of this historically significant location with meaningful and responsible projects.

→ **Unmanned Sea Surface Vessels**

→ **Littoral Combat Ship (LCS)
Watercraft Launch and
Recovery Systems**



→ **Hydrofoil Small Waterplane
Area Ship - HYSWAS**



→ **Hybrid-Electric Marine Drive
System**



→ **Advanced Technology Electric
Pickup Truck**

→ **Autonomous Vehicle Testing**



→ **Electric Vehicle- Smart EV**

→ **Specialty Vehicles**



Customers

Our customers are among the most compelling and creative organizations in the world ranging from the U.S. Government to Fortune 500 companies and International shipbuilding organizations, including:

- General Dynamics
- Northrop Grumman
- Defense Advanced Research Projects Agency
- Naval Surface Warfare Center, Carderock
- Naval Sea Systems Command
- Office of Naval Research
- US Air Force
- Naval Research Lab
- Hyundai Heavy Industries

Profile



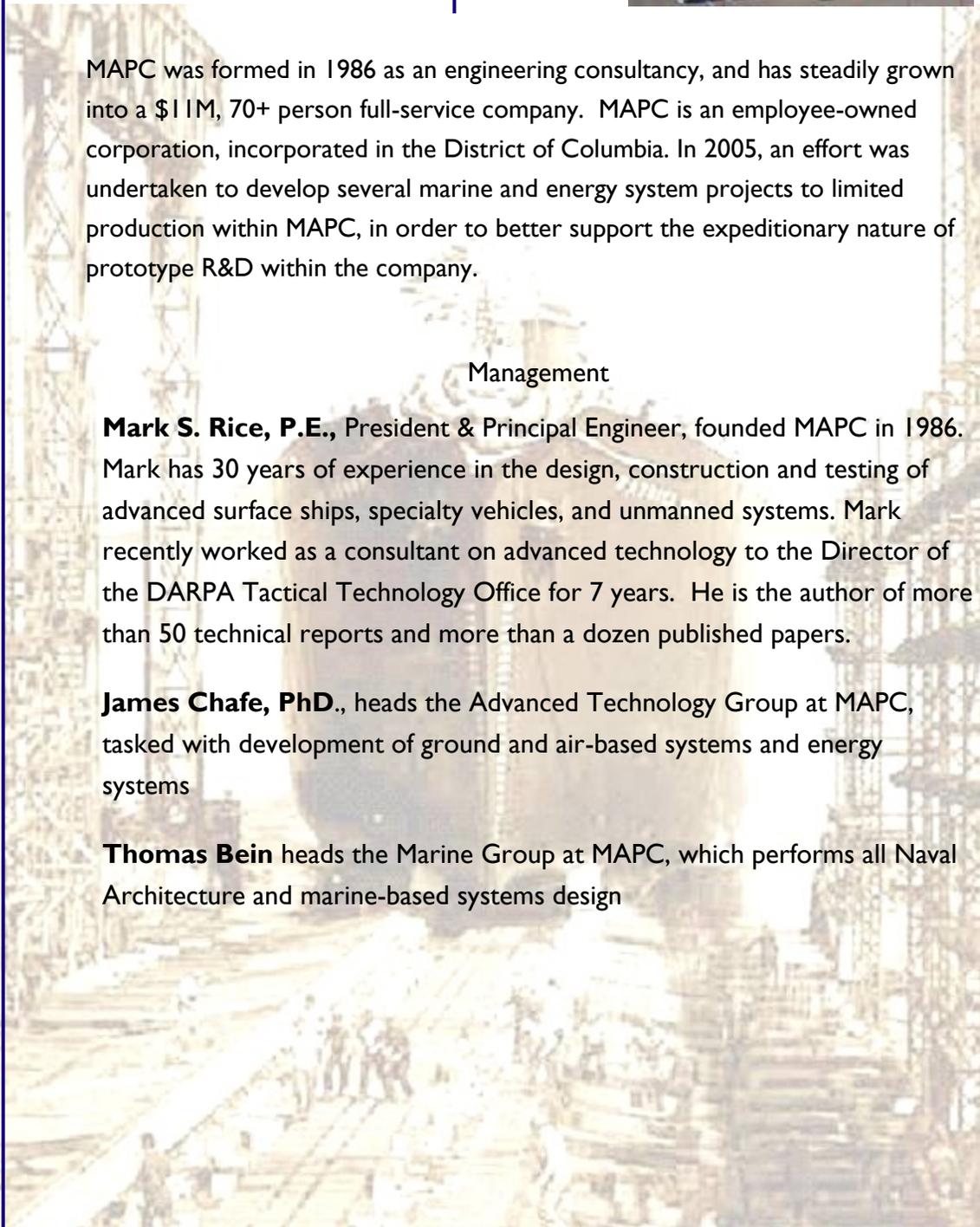
MAPC was formed in 1986 as an engineering consultancy, and has steadily grown into a \$11M, 70+ person full-service company. MAPC is an employee-owned corporation, incorporated in the District of Columbia. In 2005, an effort was undertaken to develop several marine and energy system projects to limited production within MAPC, in order to better support the expeditionary nature of prototype R&D within the company.

Management

Mark S. Rice, P.E., President & Principal Engineer, founded MAPC in 1986. Mark has 30 years of experience in the design, construction and testing of advanced surface ships, specialty vehicles, and unmanned systems. Mark recently worked as a consultant on advanced technology to the Director of the DARPA Tactical Technology Office for 7 years. He is the author of more than 50 technical reports and more than a dozen published papers.

James Chafe, PhD., heads the Advanced Technology Group at MAPC, tasked with development of ground and air-based systems and energy systems

Thomas Bein heads the Marine Group at MAPC, which performs all Naval Architecture and marine-based systems design



MAPC Advantage

Our blend of capabilities results from a combination of characteristics. Allow us to help you leverage these to your advantage in your upcoming projects:

◆ People

Our unique blend of Mechanical, Electrical, Ocean and Aerospace Engineers, Naval Architects, Physicists, and Technicians bring a mix of advanced degrees and real-world experience to every problem they confront.



◆ Facilities

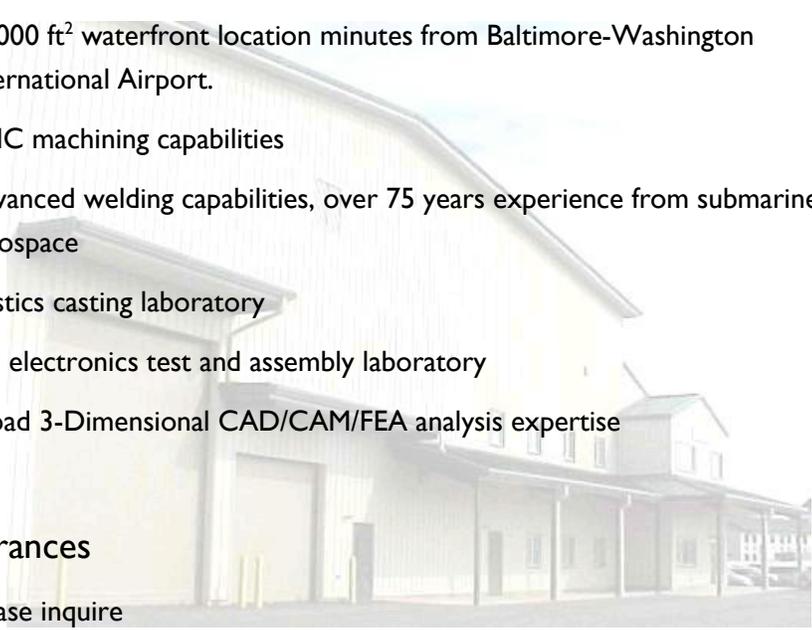
- ◆ 40,000 ft² waterfront location minutes from Baltimore-Washington International Airport.
- ◆ CNC machining capabilities
- ◆ Advanced welding capabilities, over 75 years experience from submarines to aerospace
- ◆ Plastics casting laboratory
- ◆ Full electronics test and assembly laboratory
- ◆ Broad 3-Dimensional CAD/CAM/FEA analysis expertise

◆ Clearances

- ◆ Please inquire

◆ Sustainable competitive advantage

- ◆ Empowering each employee with considerable latitude and company ownership increases employee loyalty and retention
- ◆ Proprietary ride control and watercraft dynamics software
- ◆ Selective partnering opportunities are currently being pursued that would bring long-term strategic gains to both entities.



Value

Advanced capabilities...

Affordable costs

MAPC provides maritime, land, and air systems that feature advanced capabilities normally associated with the worlds largest defense contractors, but within the dramatically smaller budget and schedule requirements more typical of a conventional fabrication facility.

Our experience with manned and unmanned maritime, land, and aerospace vehicles and power systems make MAPC an ideal partner for bringing your concept to production.



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