

ABOUT VACCO

VACCO Industries is a world-class designer and manufacturer of specialty valves, metal filters, and advanced fluid control products. Since 1954 we have earned a reputation for delivering innovative, high-performance, reliable, and cost-effective solutions for a wide variety of mission critical space, defense, commercial, and industrial applications. Our products are used in some of the most demanding environments—from ocean depths to deep space.

VACCO's success comes from the skill and experience of our nearly 450 employees as well as our collaborative approach. We work closely with each client to determine their unique needs and then assemble a multidisciplinary team of engineers, technicians, assembly and test specialists, quality assurance personnel, and program managers.

VACCO's experienced engineers design reliable, robust products that meet or exceed our clients' requirements, even for the most demanding environments or applications.

Our skilled technicians combine their extensive knowledge of materials with a state-of-the-art machine shop to precisely and efficiently craft engineered products and components.

To maintain the highest levels of quality, performance, and reliability, VACCO assembles and tests its products in dedicated clean rooms that meet for exceed ISO 14664-1 Class 7/FED STD 209E Class 10,000 standards. We are also certified to the latest ISO 9001, AS 9100, and Performance Review Institute's Nadcap standards.

VACCO's program management team works hand-in-hand with clients to ensure the successful completion of projects, regardless of complexity.

VACCO is part of the Filtration/Fluid Flow Group of ESCO Technologies Inc.



PRECISION ETCHED PARTS

Photochemical and Laser Machining for Precision and Performance

VACCO excels in producing complex, precision etched, thin metal components—such as microfluidic devices, screens and meshes, disc filters and more—for a wide variety of aerospace, automotive, electronic, scientific, medical, and industrial applications.

Home to one of the largest photochemical etching facilities on the West Coast, VACCO produces high quality metal components in a cost-effective manner. Our comprehensive services—from engineering and design assistance to materials selection and expert technical support—enable us to meet our clients' exact performance and quality requirements.

VACCO also provides laser services, including precision laser cutting, micro welding, marking, and more. This allows VACCO to consistently meet the tightest of tolerances while providing unrivaled design flexibility and manufacturing speed.

VACCO also offers additional value-added services to enhance the value of our micromachined parts and to provide complete fabricated components on a turnkey basis, including:



- Adhesive bonding
- Assembly
- Diffusion bonding
- Forming
- Laser cutting/welding
- Packaging

For more information, please visit vacco-etch.com

vacco.com



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VACCO®

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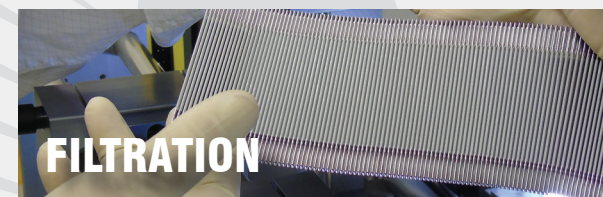
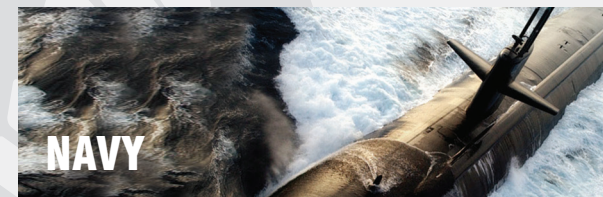


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SPACE

Propulsion System Components

Since the days of Project Gemini VACCO has helped push the boundaries of space exploration by delivering robust, reliable, and high-performance components for propulsion systems used by NASA, the military, and the commercial space industry.

Now VACCO is one of the largest providers of cryogenic fluid controls, isolation latch valves, service valves, pressure regulators, check valves, quick disconnects, and filters for satellite and space programs.

Working closely with NASA and other primes VACCO has become the premiere supplier of critical cryogenic and pneumatic components for the U.S. manned space and expendable launch vehicle programs. In addition to providing components for many of NASA's Earth and Deep Space science spacecraft—including Juno, New Horizons, and the Mars Science Laboratory—our products have been critical parts of the main propulsion systems for the Apollo program, the Space Shuttle, and the new Space Launch System.

CubeSat Propulsion Systems

VACCO also supports the future of space exploration with our CubeSat Micro Propulsion Systems (MiPS). We produce self-contained and high-performance MiPS that consist of fully integrated thrusters, valves, filters, propellant storage tanks, interconnecting flow paths, control electronics, and digital interfaces. VACCO MiPS can use cold gas, warm gas, or green propellant systems.

To date VACCO has produced more than a dozen MiPS to support the Air Force Research Laboratory, the National Reconnaissance Office, NASA, and commercial flight applications, including JPL's MarCO CubeSat program.

VACCO is continually innovating propulsion systems and components, providing in-space refueling mechanisms, next-generation thruster valves, xenon and iodine micro feed systems and valves, positive isolation valves, and mechanical and electronic pressure regulators.

For more information, please visit cubesat-propulsion.com

NAVY

Critical-Quiet Technology for Navy

For more than 40 years VACCO has provided the U.S. Navy with advanced air and fluid valves, manifolds, regulators, and filters products that are essential to its effective operation.

The Navy's Virginia- and Columbia-class submarines take advantage of VACCO's critical-quiet valves and manifolds to help maintain their stealthiness. Our quiet air reducing manifolds, which include filtration, regulation, and relief functions, can be deployed in a dual design configuration to ensure continuous operation even if one regulator needs to be taken offline for repairs.

VACCO's critical-quiet and non-quiet products are used on Nimitz-class supercarriers, Virginia-class nuclear guided missile cruisers, and Whidbey Island-class dock landing ships.

All VACCO naval products are designed to meet strict requirements for performance and reliability, use corrosion-resistant materials, and are manufactured to exacting quality standards.

Services and Support

VACCO also provides the U.S. Naval Fleet with additional services and support, including:

- Global, onsite engineering and technician support
- Hardware repair, refurbish, and overhaul (meets Level1/SUBSAFE standards)
- Performance testing and verification
- Shipboard training
- Submarine decommissioning support
- Non-OEM testing

FILTRATION

Advanced Filtration Solutions

VACCO designs and manufactures metal mesh and etched disc filters that deliver absolute filtration for critical fluid, gas, and propellant management applications. Manufactured out of stainless steel and titanium, VACCO's filtration products are custom engineered to meet specific performance requirements and precise levels of cleanliness and filtration.

From propellant management devices on cruise missiles and satellite fuel tanks to maintaining cleanliness in satellite and launch vehicle propulsion systems, VACCO filtration solutions are integral to the mission success of many leading aerospace programs in the U.S. and throughout the world. Additionally, our filters are used in a wide variety of naval, medical, industrial, and commercial applications to protect critical equipment and eliminate contamination.

VACCO filtration products include:

- Etched disc filters
- Metal mesh and screen filters
- Sintered metal fiber filters
- Propellant management and surface tension devices
- Re-cleanable filter elements
- Pleated metal filter discs
- Metal fitting filters
- Inline and T-type metal filter assemblies
- Nuclear filtration system solutions.

VACCO®

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