

Barber



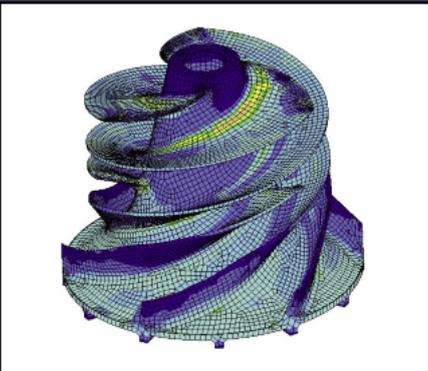
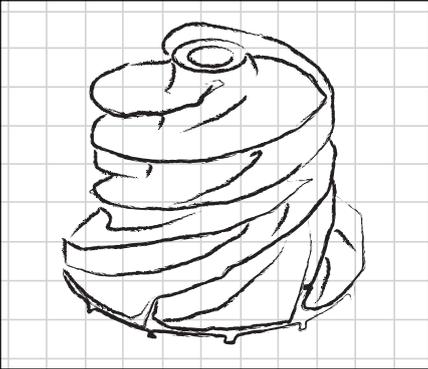
Nichols

Design & Manufacture of Specialty Turbomachinery



Solutions Since 1966

About Barber-Nichols



Barber-Nichols, Inc. (BNI) is an internationally recognized leader in the designing, manufacturing, testing, installing, and servicing of specialty turbomachinery. Extensive experience combined with fully integrated engineering and manufacturing facilities uniquely position BNI to develop cost effective optimized solutions that exactly fit your needs.

Product offerings include cryogenic pumps to high temperature turbines, sub-Watt pumps to complete turnkey electrical power generation systems, and much more. Barber-Nichols has grounded experience you can trust and the ability to manage your project from conceptual design to system startup. Along with prototype development, BNI can provide limited run, high-precision manufacturing and aftermarket service and support.

Barber-Nichols is an agile, customer centric organization that works with a variety of clients from the scientific community and government agencies to private industry. Please contact us or schedule a visit to learn how we can put our experience to work for you.



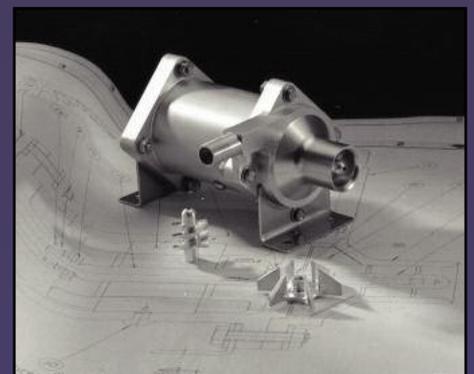
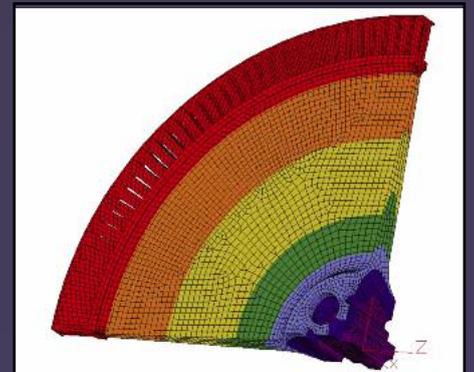
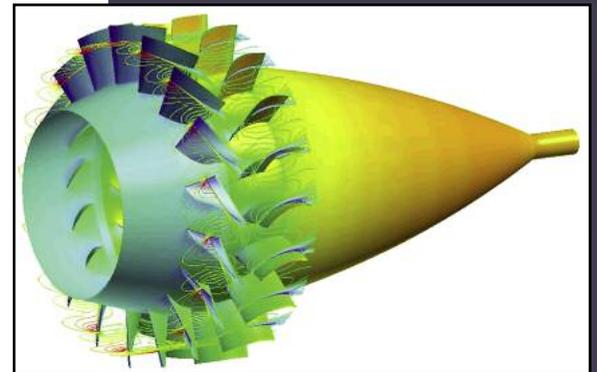
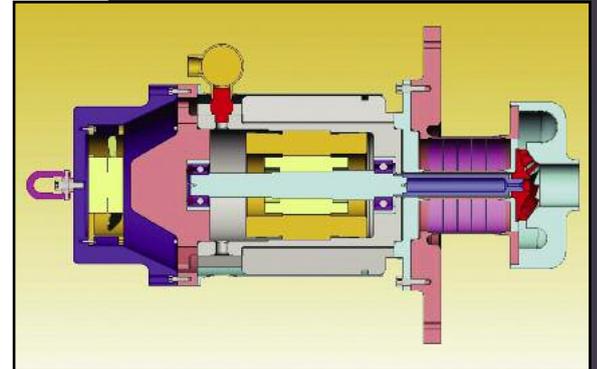
Engineering Services

Barber-Nichols' highly skilled engineering teams have been designing high performance rotating equipment since 1966; specific areas of expertise include Prototype Design and Design for Manufacturability (DFM). Project engineers average 24 years of industry experience and the company typically designs twenty clean sheet prototypes each year. Design engineers, manufacturing engineers, and machinists all work together to develop customized, reliable, cost effective solutions.



Sophisticated design and analysis tools combined with experience and empirical data help engineers quickly move projects from concept to final design. Cutting-edge Computational Fluid Dynamic, Finite Element, Rotor Dynamic, and Thermal Analyses guide the development process. Additionally, Barber-Nichols designs and builds custom electronics packages when equipment requirements exceed that of commercially available products.

Products have been designed for many applications including both the ordinary and the extraordinary. Ordinary products are typified by electronics cooling pumps where DFM is used to minimize costs. Extraordinary products include rocket engine turbopumps which are covered in frost at one end, glowing red hot at the other, and produce more than 10 horsepower per pound of weight. BNI's full suite of engineering services is used to maximize reliability while minimizing size, weight, and cost.



Product Manufacturing

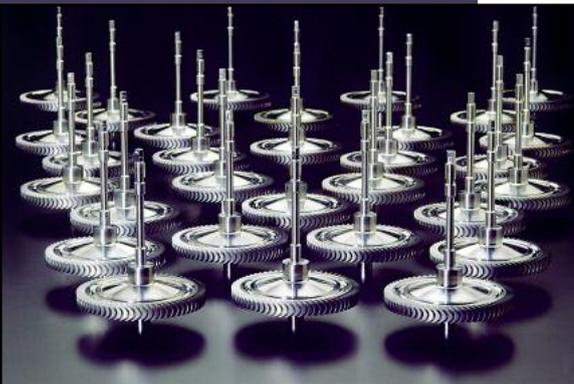


Barber-Nichols is a world leader in the prototype preproduction, and mid-volume manufacturing of high-performance rotating equipment. Because BNI controls the engineering and manufacturing processes we take full responsibility to ensure the equipment you purchase operates as designed. For you the customer, this means high quality custom equipment delivered on time with greater peace of mind.

BNI has a full complement of five-axis milling, precision turning, welding, and precision grinding centers. Highly experienced programmer/machinists utilize CAD/CAM software, routinely hold tolerances to 0.0025 mm (0.0001 in), and work with a variety of materials from aluminum to high temperature superalloys.



Additionally, BNI provides Electrochemical Machining (ECM) services. ECM is a rapid, cost-effective machining process that is unaffected by material hardness and eliminates heat and mechanical stress from the machining process. Two-dimensional tolerances can be held to ± 0.001 inches, three-dimensional tolerances can be held to ± 0.002 inches, and 5 - 15 μ inch Ra surface finishes are achieved in a single pass.



In addition to high quality people and equipment, Barber-Nichols has the process control, tracking, and quality systems in place to guarantee product quality. An Enterprise Resource Planning (ERP) system coordinates all BNI's operations and a documented quality system ensures product conformance to all customer specifications.



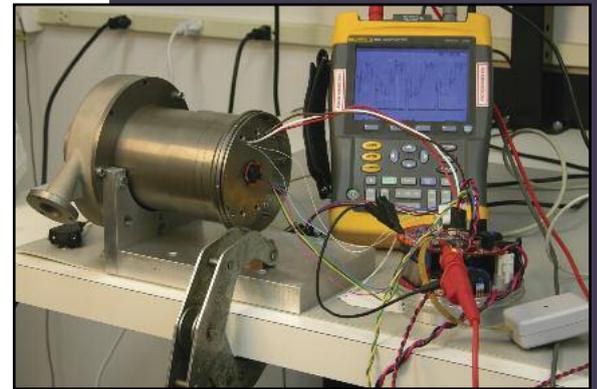
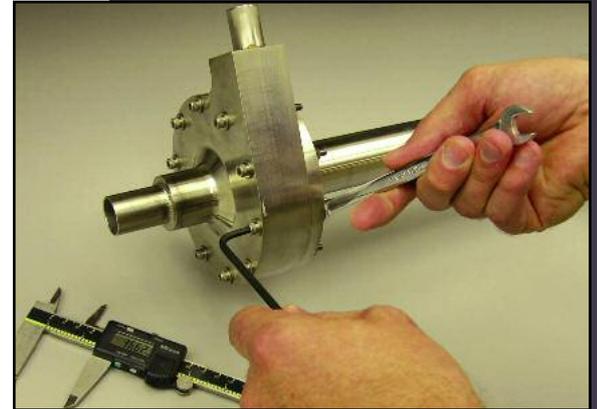
Product Supply & Service



Barber-Nichols seamlessly integrates inspection, assembly, testing, installation, and lifetime service. As a result, equipment performance is established, system commissioning is streamlined, and equipment reliability and life are maximized.

Components are rigorously inspected and then delivered to BNI's newly renovated assembly and testing laboratory. Highly skilled technicians meticulously assemble individual components; integrate secondary processes; perform development, acceptance, and qualification tests; and prepare hardware for delivery.

BNI's engineers and technicians travel around the world to assist with hardware installation, system start-up, and operator training. And after your system is online, BNI continues providing world class customer service. All products are fully warranted and service plans are available upon request. BNI's friendly and knowledgeable staff quickly processes part orders, diagnoses equipment problems, and coordinates in-house and on-site repairs.



Astronautic Products



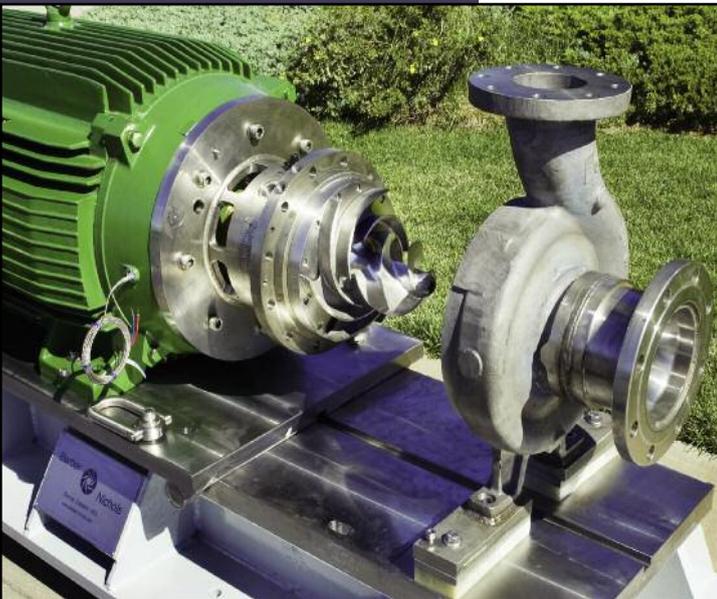
In addition to developing top quality pumps, blowers, compressors and turbines for space flight and ground support operations, Barber-Nichols has designed and manufactured more new liquid rocket engine turbopumps than any other U.S. company since 1996. BNI strives to minimize costs without compromising reliability, performance, weight, or efficiency.

Barber-Nichols specializes in material compatibility and regularly develops products that are resistant to extreme temperature fluctuations. Products designed for astronautic applications are meticulously inspected, rigorously tested, fully traceable, and adhere to the highest AS 9100 quality standards.



Select Products Include:

- Lightweight, Economical Rocket Engine Turbopumps
- Closed Brayton Cycles for Use With Nuclear Propulsion
- Reliable, Maintenance Free Pumps for Extended Unmanned Missions
- Hot & Cold Nitrogen Gas Blowers for Use With Satellite Test Chambers



National Defense Products

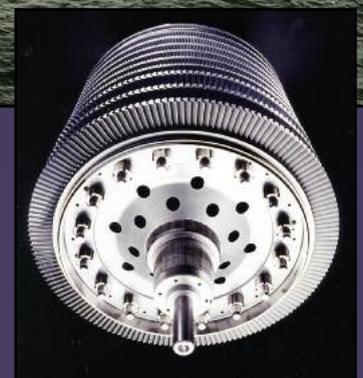
Barber-Nichols specializes in quiet, compact, reliable rotating equipment for the world's most demanding military applications. Offerings include high performance pumps, fans, blowers, circulators, compressors, and turbines for air, land, and marine vehicles. Innovative prototypes can be developed based on the end user's specifications or time tested products can be modified for new applications. BNI optimizes product performance while minimizing production cost by focusing on manufacturability and system integration during the design process.

Upon completion of the manufacturing process, equipment is rigorously inspected and subjected to acceptance, qualification, and life tests to ensure product performance and reliability. Finally, BNI provides lifetime product support which includes maintenance kits, replacement parts, and service.

Select Products Include:

- Light Weight Pumps, Fans, and Compressors for Avionics Cooling, Radar Cooling, and Environmental Control
- High Performance Pumps and Fans for Land Vehicle Engine Systems
- High Temperature Turbine Driven Propulsion Systems
- Light Weight Pumps and Turbines for High Performance Marine Vehicles
- Turbine-Generators for Electrical Power Production

Drive Options: 400 Hz, Brushless DC, Turbine, Hydraulic, High Speed Gearbox, Variable Frequency, etc.



Vehicle Photographs Courtesy of
the U.S. Department of Defense

Cryogenic Products



Barber-Nichols manufactures the world's premier centrifugal cryogenic pumps, circulators, blowers and compressors for use with fluids at temperatures down to 2.6 Kelvin. These units minimize heat leak and are highly efficient, hermetically sealed, and easy to service. For the end user, these features provide a low total cost of ownership.

Custom engineered products are designed specifically for integration into the end user's system, and as a result, system performance is optimized. All designs are rigorously tested and top quality customer service ensures that maintenance kits, spare parts, and service are all available upon request.

Select Products Include:

- Supercritical Helium Circulators for the Cooling of Superconducting Magnets
- Hot & Cold Nitrogen Gas Blowers for Use With Satellite Test Chambers
- Pumps for Use With Liquid Hydrogen & Oxygen Rocket Propellants
- Liquid Nitrogen Circulators for the Cooling of Synchrotron Beamline Crystals
- Cold Gas Compressors for Use With Liquefied Natural Gas

Other Cryogenic Fluids Include: Argon, Carbon Dioxide, Krypton, Methane, Neon, Xenon, and more.



Energy Products

Barber-Nichols is your number one source for custom engineered rotating equipment used with liquefied natural gas, electrical power generation, and alternative energy applications. Since 1966, BNI has been building innovative energy and power equipment to help organizations leverage their energy resources. Barber-Nichols' pumps, blowers, compressors, and turbines are compact, highly reliable, and extremely efficient.

In addition to hardware supply, BNI can assist with specification consulting and overall system integration. Finally, on-site commissioning is available when appropriate and every product is backed up with world class customer service and support.

Select Products Include:

- High Speed Anode & Cathode Gas Blowers for Fuel Cells
- Robust LNG Vapor Return Blowers for Receiving Terminal
- Efficient Electrical Power Generation Equipment for Industrial Waste & Geothermal Heat
- Reliable LNG Pumps for Vehicle Fueling
- Rankine and Process Gas Turbine Generators
- Closed Brayton Power Cycles



Quality Assurance



Barber-Nichols' Quality Policy:

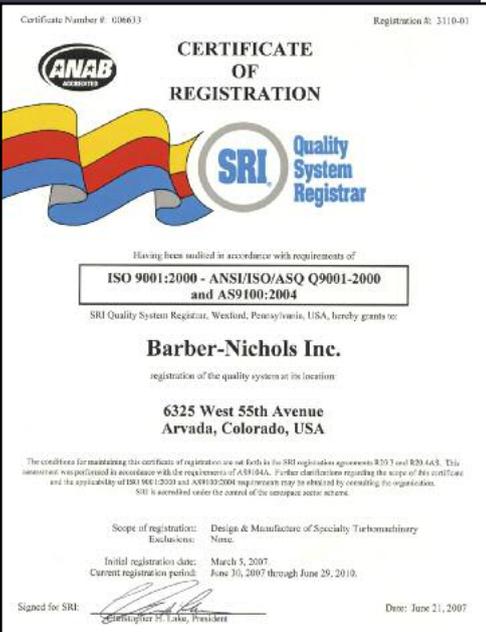
"At Barber-Nichols, Inc., we're here to please our customers, explore new technology, make money, have fun, and be the very best at what we do."

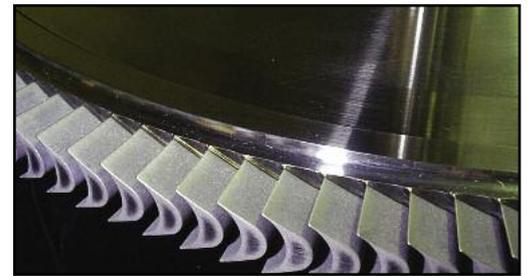
From the drawing board to the production floor to the test lab, BNI monitors quality every step of the way. A documented quality system ensures product conformance to all customer specified requirements. Barber-Nichols' quality system is comprehensive but flexible, allowing for individual customer and program requirements.

The following value-added services are also available:

- Three-Dimensional Coordinate Measuring Machine (CMM) Inspection
- Government Source, Third-Party Witnessing & Record Auditing
- Complete Data Packaging Which Includes the Coordination of All Outside & Special Processing

**Barber-Nichols is an
AS 9100 & ISO 9001
Registered Company**





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6325 West 55th Avenue • Arvada, CO 80002 USA
Phone: 303.421.8111 / 877.324.8955 • Fax: 303.420.4679
www.barber-nichols.com • info@barber-nichols.com