Power Generation
Empowering innovation worldwide

aerospace
climate control
 electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding
Energizing the energy business

Advanced technologies and systems that deliver the availability, flexibility, sustainability, reliability, and profitability you need.

**AVAILABILITY:**

*WORLDWIDE AND WORLD RENOWN*

With 50,000 employees serving 500,000 customers in almost 50 countries, Parker is literally everywhere you need us to be. By working with us, you have access to an integrated network of 316 manufacturing plants, 13,000 distributors and MRO outlets, and over 1,500 ParkerStores. Not only that: our technicians and market-specific engineers are ready to help you with system or subsystem design, on-site or off.

**FLEXIBILITY:**

*SYSTEMS THAT OPTIMIZE VALUE*

As the world’s motion control expert, Parker offers you a complete range of proven, off-the-shelf products. Engineered to work together, these products deliver streamlined systems and subsystems with exceptional quality and durability. Whether for geothermal, wind, and solar ... or nuclear, fossil fuel, gas turbine, and combined cycle plants ... our system solutions reduce costs and advance performance. Cleanly. Efficiently. And reliably.

**PROFITABILITY:**

*LEAN AND CONTINUOUS*

At Parker, we actively seek new and better ways to do things as part of our mandate for continuous improvement. Committed 100% to total support, we partner with our customers to focus on creating solutions that are smaller, lighter, more energy efficient, and highly reliable, as well as cost effective. And we offer services that reduce outage times and operational costs, such as:

- **Custom kits:** With materials organized by order and quantity, these single part-number kits streamline procedures, reduce assembly time, and lower costs.
- **An international network of support facilities:** To meet emergency needs and reduce downtime.
- **Vendor-managed inventory:** Including custom-tailored bin-filling programs managed by us.

**SUSTAINABILITY:**

*PROTECTING PEOPLE AND ENVIRONMENT*

Parker can help you meet the need for fuel-efficient, low-emission, high-performance energy. Our advanced technologies and innovations improve emissions performance, minimize waste, meet environmental regulations, monitor air and water quality, offer longer life, and help create greater fuel efficiency.

**RELIABILITY:**

*NATIONAL AND INTERNATIONAL CERTIFICATIONS*

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Want to know more about wind power and other emerging technologies? Call 1-800-C-Parker. International customers call 00800 27 27 5374.

**FM:** Assures customers a product or service has been tested and conforms to the highest national and international standards.

**NS:** Quality assurance of construction materials, design, operation, inspection, and continuing maintenance of nuclear facilities.

**PED:** Certifying pressure equipment and assemblies.

**PM:** Globally recognized certification of project management expertise.

**UL:** An independent product safety certification.

Our certifications verify that our systems and solutions offer the highest possible quality for the most efficient performance. These include:

- **ASME:** Codes and standards set by the American Society of Mechanical Engineers.
- **ATEX:** Covering equipment operating in mines or potentially explosive gas, vapor, or air/dust environments.
- **B31.1/B31.3:** Certifying process and power piping.
- **CE:** Indicating that a product has met EU consumer safety, health, or environmental requirements.
- **CSA/CRN:** Shows product has been tested and meets applicable national standards in the U.S. and/or Canada.
Biogas generated in landfills and wastewater digesters contains siloxane – a man-made chemical that changes into silicon dioxide (sand) when combusted. When landfill and digester gas are used to fuel turbines, reciprocating engines, and fuel cells that generate electricity, silicon dioxide build-up due to siloxane significantly increases maintenance costs, reducing the feasibility of these important green energy projects. Parker’s GES Siloxane Removal System removes siloxanes from biogas, reducing maintenance costs, improving profitability, and ultimately making more of these projects cost-effective. Parker also provides advanced biogas chilling systems and filters to further treat and clean biogas used for power generation. Look to Parker for innovative solutions and filtration protection.

COMBUSTION TURBINE

Parker has been at the forefront of combustion turbine technology from the earliest high-performance jet engines to today’s most demanding power generation applications. Over five decades of experience have given us wide ranging expertise in systems and components for fuel and water atomization, fuel controls, emission controls, and condition monitoring ... all driving turbine efficiency rates. By working with Parker, you’ll benefit from sustained engine performance with higher MW output, the lowest maintenance costs, extended engine and component life, reduced operating costs, and lower emissions due to greater fuel-burning efficiency.

SILOXANE REMOVAL: Improving the profitability of biogas-to-energy projects

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How Parker drives power conversion

The SSD Drives division manufactures electric power conversion systems including variable speed drives for AC, DC, and servo motors, and grid tie inverters. Applications for drives include variable speed blowers, ID and FD fans, cooling towers, pumps, and compressors. Other capabilities include synchronous generator field supplies and electric starting systems for gas turbines. Grid tie inverters are used extensively in wind, wave, and solar power generation. SSD power conversion systems are also used in spinning reserve systems, grid frequency stabilization, and peak shaving applications, efficiently linking battery storage to the grid. In addition, Parker power conversion systems can provide KVAR compensation for optimization of power factor.
Power Source: COMBUSTION TURBINE

Better combustion for cleaner-burning engines.

Look to Parker for:

- Filtration, lubrication, and condition monitoring
- Emissions reduction
- Fuel control and delivery systems
- Initial fogging system
- Continuous emissions monitoring systems (CEMS)
- Expansion joints

Filtration, lubrication, and condition monitoring
- Burns, ash, water, and moisture can harm turbine blades and rotors, leading to fatigued and reduced output.

Emissions reduction
- Burned fuel contributes to carbon emissions and limits of acceptable performance.

Fuel control and delivery systems
- Many gas turbines run on dual fuel sources (biogas, H2, etc.) for peak efficiency.

Initial fogging system
- Fine particles of water can be a significant cause of performance degradation.

Continuous emissions monitoring systems (CEMS)
- CEMS continuously monitor stack gases for critical emissions.

Expansion joints
- Long-lasting performance for Parker ABEX Servovalves.

Engineered Solutions

Fasten your seat belts, Parker’s aerojet services for nozzles are available.

COMBUSTION TURBINE

CB CHECK VALVES PREVENT COMBUSTION

Problem:
- Fuel can cause combustion systems to often be subject to fluctuations in fuel pressure
- Fuel can lead to premature failures
- Fuel can cause wear and tear on combustion systems

Solution:
- Parker’s CB Check Valves and Four-Port Check Valve

Parker Advantage:
- Reduce fuel variations
- Prevent/eliminate problems related to fuel

EMISSIONS REDUCTION

Problem:
- Fuel can contribute to NOx and CO from turbine exhaust

Solution:
- Use Parker nozzle technology that helps reduce NOx and CO from turbine exhaust

Parker Advantage:
- Help reduce NOx and CO from turbine exhaust
- Help increase turbine efficiency

FUELS AND FUEL GAS CONTROL SYSTEMS

Problem:
- Multiple suppliers for HPU components
- Result in extended lead times and poor product support

Solution:
- Parker – a single source for complete HPU packages

Parker Advantage:
- Parker HPPs provide an integrated package that includes filters, hoses, and machined metal parts
- Our experience in the industry

HYDRAULIC POWER UNIT FOR SINGLE-SOURCE EFFICIENCY

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SENSORS FOR DATA COLLECTION

Problem:
- Internal pressure, temperature, and flow fluctuations around the turbine

Solution:
- Parker Senso Controls data collection

Parker Advantage:
- Parker's overall reliability, cost-effectiveness, and adaptability

ICOUNT BOTTLE SAMPLER FOR CLEANLINESS MONITORING

Problem:
- Oil varnish causes servos to go “hard over,” resulting in costly turbine trips

Solution:
- Parker’s SMR (Sub-Micron Removal) System

Parker Advantage:
- Parker’s SMR system contains patented Balanced Charge Agglomeration (BCA™) technology
- Parker’s SMR system removes sub-micron particles
- Parker’s SMR system tailors design

AXES SERVOVALVES ELIMINATE TURBINE TRIPS

Problem:
- Problems with the servovalves can result in costly turbine trips

Solution:
- Parker ABEX servovalves

Parker Advantage:
- Parker ABEX servovalves are a fail-safe design
- Parker’s ABEX servovalves operate up to a 3000 psi pressure
- Parker’s ABEX servovalves are designed for long-life service
COMBINED CYCLE

No matter how your combined cycle plant operates – base load, simple cycle, seasonally, or peaking – Parker has everything you need to keep it running at optimum efficiency. Our combined cycle applications include systems, subsystems, and components that work throughout the plant to reduce emissions, lower maintenance costs, preserve plant and component life, and improve turbine efficiency. From hydraulics and pneumatics to electromechanical, instrumentation, filtration, sealing, emissions controls, fluid connections, and HMI, you can turn to Parker for solutions that will meet and exceed both your specifications, and your expectations.

Highest performing fuel and fog nozzles

Derived from Parker aerospace technology, our patented Macrospray® nozzles offer the highest performance in the industry, driving the lowest NOx emissions and improving gas turbine efficiencies through improved fuel flow, atomization, better combustion, and lower installed and lifecycle costs.

New technologies
HMI solutions for plant control systems and monitoring

The drive toward open solutions and PC-based machine control is fueling a revolution on the plant floor – a revolution Parker is well prepared for. Offering a full range of hardware and software HMI solutions with the connectivity and expandability of an open platform, our integrated touch-screens, industrially-hardened workstations, and software packages focus on meeting the needs of the power plant with products that offer real-time response, high reliability, deterministic control, and ease of development and support.
Power Source: COMBINED CYCLE

Systems, subsystems, and components that improve plant efficiency in all operating modes.

Look to Parker for:

- Plant efficiency in all operating modes.
- Systems, subsystems, and components that improve Power Source.
- Liquid fuel filtration.
- Hydraulic lift oil pump.
- Hydraulic cylinders.
- Hydraulic power unit.
- Fuel and air control.
- Diverter damper controls.
- Nitrogen generators.
- Expansion joints.
- Fuel and air control.

Liquid fuel filtration offers industry-leading and control valves steam blowdown assembly, providing reliable fuel and air delivery.

Hydraulic cylinders are designed for high-temperature operation up to 1,800°F (982°C).

Expansion joints for hydraulic and lubrication systems prevent coking and varnish.

Diverter damper controls provide reliable fuel and air delivery.

High-temperature assembly for applications up to 1,800°F (982°C).

Steam blowdown assembly, providing reliable fuel and air delivery.

Nitrogen generators are designed for high-temperature operation up to 1,800°F (982°C).

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Parker is proven in the power industry like no other supplier. Our years of technology innovation have created motion and control solutions for applications that range from coal handling to emissions monitoring, and everything in between. Our fluid system solutions are particularly impressive. Whether for hydraulics, hydrogen and air, or high-temperature steam systems, Parker has a vast array of legacy and new performance-enhancing components that improve system life, increase safety, eliminate time and cost, boost efficiency, and accurately meet standards for emissions compliance.

FOSSIL FUEL

Coal-fired power plant owners are working hard to find ways to reduce EPA-mandated mercury emissions. Key to the challenge? Accurate, reliable, and cost-effective mercury-monitoring bundles like Parker’s Multitube® umbilicals.

Consisting of multiple long lengths of pure fluoropolymer tubing wrapped together with high-temperature heating elements, Multitube umbilicals are used to extract stack gas from a probe located at the top of a smoke stack. The umbilical transports the gas by vacuuming it down to a mercury analyzer, where its mercury content can be verified.

Elevated mercury sample temperatures at the analyzer are critical to achieving quality readings and protecting the analyzer from moisture ingress. Parker’s mercury umbilicals maintain a consistent 395°F (202°C) temperature for proper sample transport. In addition, Parker-manufactured tubing offers reduced cost and improved quality. Long-length umbilicals in excess of 1,000 feet are available, and are estimated to save utility companies approximately 35% over conventional bundles. Plus all Parker Multitube bundles meet IEEE specs.
Power Source: FOSSIL FUEL

One supplier. Multiple options.

Look to Parker for:

1. Oil monitoring and conditioning systems
2. Hydraulic system for coal off-loading
3. Abrasion-resistant CERGOM 10 hose
4. Steam control and instrument racks
5. Continuous emission monitoring systems (CEMS)
6. Expansion joints

- Oil monitoring and conditioning systems: Parker offers a complete line of filters, purifiers, and conditioners to maintain plant hydraulic and electrical systems.
- Hydraulic system for coal off-loading: Parker’s hydraulic systems are designed to handle high pressures and temperatures, providing long-term cost savings.
- Abrasion-resistant CERGOM 10 hose: This hose is designed for high-pressure applications, such as coal off-loading, to provide extended life.
- Steam control and instrument racks: Parker’s steam control and instrument racks are designed for high temperatures and pressures, ensuring reliable performance.
- Continuous emission monitoring systems (CEMS): Parker’s emission monitoring systems provide accurate flow and pressure measurement, essential for maintaining compliance.
- Expansion joints: Parker’s expansion joints are designed for high-temperature applications, ensuring reliable performance under extreme conditions.

Parker’s extensive line of hydraulic and steam control systems, along with high-quality tubing and fittings, ensures reliability and longevity in fossil fuel power plant applications.
Parker manufactures more than 500,000 components to meet the needs of nuclear power generation companies – components that are installed at more than 200 nuclear plants worldwide and offer the efficiency, reliability, and cost effectiveness the industry demands. But we don’t stop there. Our multi-million dollar commitment to research and development positions us as the company to partner with. Working hand in hand with you to set the standards and engineer the systems that will shape the future of an increasingly critical power source.

The ASME N Stamp quality certification program is critical to the proliferation of nuclear power worldwide. That’s because N Stamp certification is mandatory for plants designed to meet ASME requirements. In addition, Parker meets other international standards for nuclear power plants. These certifications allow Parker to provide a wide variety of products for safety-related and non-safety-related applications.

Parker’s Instrumentation Products Division in Huntsville, Alabama received its N Stamp certification for its Class 1, 2, and 3 valves in 2007, making Parker only one of about 100 companies to achieve this higher standard. N Stamps indicate that all aspects of a component, including design, fabrication, and construction, comply with ASME’s strict specifications, providing an additional layer of safety to nuclear plant operation.

CPI™ FITTINGS: A long-lasting grip on nuclear innovation

When CPI fittings were designed in 1966, installed tube fittings in nuclear plants were dominated by double ferrule technology – a technology subject to ferrule mixup, ferrule loss, vibration sensitivity and multiple sealing points for multiple leak paths. Parker engineers knew there was a better way. In CPI fittings, they created a unique, interchangeable single ferrule technology that addressed the various drawbacks of a double ferrule design – a technology that evolved with the nuclear market. CPI fittings are just one of the many innovations Parker has brought to the nuclear industry. For more, see the Nuclear Engineered Solutions page.
A multi-million dollar commitment to nuclear innovation.

Power Source: NUCLEAR

Look to Parker for:

- CCIMS
  Our integrated manifold solution provides precise, high-performance flow measurement and a quick disconnect replacement alternative reducing exposure to radiation. Available in remote and close-coupled mounts.

- Specialty valve systems
  Specialty valve systems provide compliance with regulatory issues such as 10CFR50 Appendix B and ASME Section III (safety-related and non-safety-related systems/boiler valves).

- Gas spring actuators
  Used in safety-critical applications to operate main steam isolation, feedwater bypass, and emergency borating valves on pressurized water reactors.

- Spring-energized metal C-seals
  In steam turbines, Parker metal seals use jacket forces, spring forces, and hydrostatic forces to seal the turbine casing with increased force, providing high-pressure sealing capabilities up to 95,000 psi (6,550 bar) with excellent corrosion and fatigue resistance.

- Automated multi-changeout filter system
  Automated multi-changeout filter systems (liquid and gas) are designed to meet severe utility, nuclear safety, and improved performance requirements.

The Parker Nuclear Portal

Our new Nuclear Portal allows Parker to bring a wide range of products from different Parker divisions to the nuclear market under an industry-compliant quality assurance program. The Portal has been developed under Parker Instrumentation’s existing NQA-1 and 10CFR50 Appendix B quality assurance programs, and utilizes best practices and guidance from industry and regulatory documents. Current products available through the Parker Nuclear Portal include the following: