RENEWABLE ENERGY
Energizing innovation in wind, solar, water, and biogas – worldwide
According to two recent reports on renewable energy trends¹ in 2011, the industry is on the grow, despite a shaky world economy.

- Global renewable energy investment was at a record $257 billion. Parker’s investment in renewable energy R&D has also grown every year.
- Solar generation surged past wind power to become the renewable energy technology of choice for global investors. Parker offers solutions for solar panel manufacturing, motion and control technologies such as pitch actuators, as well as energy extraction, power conversion and cooling, and energy storage.
- In 2011, renewable energy technologies continued to expand into new markets: around 50 countries installed wind power capacity. From blade pitch systems, shaft and yaw brake systems, filtration and connectors, to advanced cooling and power conversion systems, Parker solutions in wind deliver reliable performance and unsurpassed quality.

A collaborative partner and technology expert with years of experience in the field, Parker’s commitment to solving the high-tech manufacturing challenges of renewable energy is unequalled.

From capture and conversion, to commercialization, integration, storage, transportation and protection, we’re leading the way with engineered solutions that are both proven and practical as the world turns to alternatives in the face of high oil prices, growing concerns over energy security, and the threat of climate change.

Pressured to meet the demands of a world expected to consume 45% more energy by 2030, energy companies are looking for new ways of thinking as they face the challenges of manufacturing and utilizing renewable energy in a post-carbon world.

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Your challenges:

- Unknown
- Unknown

“Treat the earth well:
We do not inherit it from our ancestors,
we borrow it from our children.” -Unknown


Our solutions:

Happening now:

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¹ Renewable energy trend reports issued in June of 2012 by the United Nations Environment Programme (UNEP) and the Renewable Energy Policy Network for the 21st Century *REN21

China was the top hydropower producer. (Need fact about Parker capabilities for hydropower)

Alternative energy technologies continue to be developed. Parker is working with customers to develop offshore wave power systems using a combination of our variable-speed drive and hydraulic technologies.

Although Europe dominates biogas production, the trend is also catching up fast in countries like Japan, Australia, New Zealand, and the U.S. (Need Parker fact on biogas here)
Faster development • Complete support
From concept through production, our ability to design, prototype, and manufacture worldwide will shorten your design cycle, improve production efficiency, and simplify procurement procedures.

- Parker engineers and scientists provide valuable, early-on collaboration for production optimized design and streamlined development.
- In-house tooling and manufacturing capabilities facilitate rapid prototyping.
- Advanced manufacturing quality systems are utilized to ensure products meet leading quality standards.

These capabilities guarantee you the greatest reliability and the most competitive total cost of ownership for your renewable energy systems.

Global expertise
Renewable energy is a key market-focused business unit for Parker. As such it earns significant Parker revenue investment. With a dedicated global team of renewable experts drawn from multiple Parker divisions, the business unit leverages the power of Parker, offering cross-technology innovations and cross-market competencies to help drive down the cost of owning the best possible quality for the most efficient performance in even the most challenging environments.

A multiple technology provider
Proven solutions in advanced motion and climate control, filtration and condition monitoring, hydraulic and pneumatic management, actuation, instrumentation, motors and drive technology, and sealing and shielding give you a wealth of integrated, multi-technology systems, subsystems, and components engineered to work together, producing a far more efficient and reliable energy generation system.

Selectable levels of integration • Fewer suppliers
When it comes to suppliers in renewable energy, you want fewer companies with more capability. Our selectable levels of integration – which include components, sub-assemblies, and integrated systems – give you plenty of options, saving you time and money by reducing the need for multiple suppliers, lowering development cost and speeding time to market.

At Parker, we don't just engineer sustainability, we live it. We work to reduce the carbon footprint of our facilities, localizing our supply chains to minimize environmental impact and reduce waste while maximizing the economic potential of the region.

PROLINE®
A complete line of durable polyurethane tubing for demanding applications.

Global and local
Your language, your time zone, your currency. No matter where you develop, assemble, manufacture or install, Parker is there. By working with us, you have access to an integrated network of global manufacturing plants, distributors, sales and service offices in every major country.

Service and support
Our approach to customer service and support is as innovative as our renewable technologies, making your workday more productive as we reduce your hidden costs and improve your profitability with the following:

- 13,000 distributors, sales offices, and MRO outlets – Instant access to parts, products, maintenance, service, and solutions.
- ParkerStores – Your local source for hose assemblies, hydraulics, pneumatics, filtration, and more – around the corner and around the world.
- ParkerStore Containers – A transportable workshop providing on-site maintenance and product support.
- Hose Doctor® – Emergency mobile hose repair and replacement in the field.
- Kitting – Multiple components in a customized kit with a single part number for easier order processing and assembly.
- Piping Solution Center – Global service centers offering single-source, non-welded piping solutions including consultation, design, assemblies, and installation.
- Training – Bespoke training sessions with qualified instructors.
- Renewable Center of Excellence – (need client input).
- Parker Tracking System (PTS) – Bar code identification labeling system helps you identify and order replacement custom hose assemblies faster.

Eating is vitam in natura aut iisae peris. Isus mo salvante arbus rem deponentem aut quam eosam ne satiatur non.

National and international certifications
National and international certifications verify that our systems and solutions offer the highest possible quality for the most efficient performance in even the most challenging environments.

PED
UL
ISO
DNV
DIN
ASME
CCC
CE
GL
TUV

WHY PARKER
FOR RENEWABLE ENERGY
Harnessing the wind: Onshore and offshore

Parker has been on the forefront of wind power for over two decades, with solutions that touch virtually every critical function in the turbine. From integrated lube oil filtration systems and sealing technologies that make drive trains more reliable and bearings operate like new ... to compact blade pitch actuation systems that maximize rotor efficiency and minimize vibrations in the turbine ... Parker has the solutions that make today’s advanced and sophisticated wind power plants better and smarter. Case in point? Our high efficiency power conversion systems that deliver optimum power to the grid. While our scalable evaporative cooling system lowers overall system cost with up to 40% higher power throughput.

Two-phase evaporative cooling

Ideal for large wind turbine systems that have outgrown air or water-based cooling systems, our two-phase evaporative cooling system is available in a rack-integrated design or as a stand-alone unit with capacities for 18 kW to 200 kW of cooling. It offers the following benefits:

- Overall lower system cost due to increased power density (up to 40% higher power throughput)
- Safer due to nonconductive coolant
- Reduced energy consumption
- Lower maintenance
- Ability to mount in the nacelle, or at base tower (inside or outside mount)

Driving power conversion

Parker 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.
Integrated solutions that improve wind turbine reliability and performance

Parker's Wind Energy Power Solutions

Leak to Parker for:

1. **Hydraulic solutions:** Pitch systems, hydraulic power units
2. **Filter solutions:** Hose filtration system, condition monitoring system
3. **Thermal management solutions:** Two-phase evaporative cooling
4. **Sealing and shielding solutions:** Pitch bearing seals, shaft seals, rotary seals, DM shielding and coatings
5. **Fluid connector solutions:** Tube fittings, hydraulic hose and fittings, steel and stainless steel quick couplings, non-welded tube connections

**FUNCTIONAL APPLICATION AREAS**

Parker has product and system solutions for wind turbine applications that impact the following functional application areas:

- **Function and generator**
- **Blade and rotor**
- **Nacelle auxiliary systems**

**Condition monitoring system**

- Learning and condition monitoring modules provide accurate, real-time data on the condition of the turbine, to help reduce operating costs and improve maintenance, resulting in high uptime and lower cost.

**Lube Oil and Lube Tube**

- **Lube Oil System:** Parker's Lube Oil System includes a high-capacity oil bath, a closed-loop, automated oil recycling system, a modular oil tank, and modular filter system. Parker's Lube Oil Systems are designed to provide reliable, long life, and meet the needs of wind turbine applications.

**Lubrication**

- **Luber Oil System:** Parker's Luber Oil System includes a high-capacity oil bath, a closed-loop, automated oil recycling system, a modular oil tank, and modular filter system. Parker's Luber Oil Systems are designed to provide reliable, long life, and meet the needs of wind turbine applications.

**Sealing and shielding**

- **Sealing and shielding solutions:** Parker's sealing and shielding solutions include pitch bearing seals, shaft seals, rotary seals, DM shielding and coatings.

**Fluid connector solutions**

- **Fluid connector solutions:** Parker's fluid connector solutions include tube fittings, hydraulic hose and fittings, steel and stainless steel quick couplings, non-welded tube connections.

**Hydraulic systems**

- **Utilizing specially designed, high-duty cylinders:** Parker's hydraulic systems are designed to be highly efficient and reliable, providing consistent performance and reduced maintenance requirements.

**Hydraulic hose and fittings**

- **Comprehensive range available meeting EN specifications for the largest operating temperature range:** Parker's hydraulic hose and fittings are available in a wide range of sizes and materials, meeting EN specifications for temperatures ranging from -40°C to +100°C.

**Hydraulic fluid**

- **Wide range of hydraulic fluids available:** Parker's hydraulic fluids are designed to meet the demanding requirements of wind turbine applications, providing long life, reliability, and easy maintenance.

**Heavy-duty systems**

- **Encompassing the industry’s broadest range capacities:** Parker's heavy-duty systems include Parker’s hydraulic actuators, which are designed to meet the high demands of wind turbine applications, providing long life and high reliability.

**Hydraulic actuators**

- **Steel and stainless steel hydraulic filters:** Parker's hydraulic filters are designed to meet the high demands of wind turbine applications, providing long life and high reliability.

**Hydraulic options**

- **Offering non-welded tube connections:** Parker's non-welded tube connections are designed for use in extreme duty service, offering non-welded tube connections for the largest operating temperature range available meeting EN specifications.

**Energy saving solutions**

- **Two-phase evaporative cooling:** Parker's two-phase evaporative cooling solution is designed to provide energy saving benefits.

**EMI shielding and coatings**

- **EMI shielding and coatings:** Parker's EMI shielding and coatings are designed to provide electromagnetic interference protection for wind turbine applications.

**WIND ENERGY**

**SensesCentr®**

- **Solution:** Parker’s SensesCentr® condition monitoring system provides proactive maintenance and real-time monitoring.

**SensePro®**

- **Solution:** Parker’s SensePro® condition monitoring system provides proactive maintenance and real-time monitoring.

**ParFit®**

- **Solution:** Parker’s ParFit® hydraulic filters are designed to provide long life, reliability, and easy maintenance.

**ECO SE air cleaner**

- **Solution:** Parker’s ECO SE air cleaner is designed to provide long life, reliability, and easy maintenance.

**Steel and stainless steel hydraulic filters**

- **Solution:** Parker’s Steel and stainless steel hydraulic filters are designed to provide long life, reliability, and easy maintenance.

**Tube fittings**

- **Solution:** Parker’s Tube fittings are designed to provide long life, reliability, and easy maintenance.

**WIND ENERGY ENGINEERED SOLUTIONS**

**Need High-res Image**
Advanced systems for PV and CSP methodologies

Solar power is the most plentiful source of energy on the planet. Light from the sun can be directly converted to electricity via photovoltaic cell (PV) or by using mirrors or lenses to concentrate sunlight to a central receiver (CSP). Parker provides advanced systems that can be used in both methods of solar power. Our solutions include megawatt scale solar inverters and hydraulic motion systems for both PV and CSP, as well as engineered sealing solutions, thermal management solutions, and the most complete line of fluid connectors in the world. In addition, we offer established manufacturing and supply chain expertise to support large projects like solar fields. If you are designing or planning to build a solar field, Parker can provide customized solutions that will help you optimize your return on investment.

Outdoor-rated, utility scale
Solar Power Inverters are best-in-class

Long a trusted supplier of advanced electrical power conversion systems and a pioneer in utility scale energy storage systems, Parker has developed an advanced, megawatt-class PV Solar Inverter utilizing the company’s cutting-edge Precision Cooling System (PCS) technology. The marriage of advanced cooling and sophisticated electronic design results in best-in-class efficiency, a smaller physical envelope than that of our competitors, and a completely sealed system ideal for desert environments. Parker Solar Inverters also incorporate maximum power point tracking (MPPT) and fault handling capabilities to maximize availability and minimize service interruptions.

EHA superior for pitch control

Parker has developed a robust, self-contained electrohydraulic actuator (EHA) system that provides utility scale PV developers with an ideal solution for adding PV pitch control into large solar field installations. The compact EHA system is a completely self-contained unit combining a double-acting actuator, pump, and electric motor that eliminates nearly all leak paths into or out of the package. It offers clear advantages over comparable electromechanical actuator (EMA) systems because all the internal wear items are permanently lubricated for extended life and the power density of an EHA is typically three times that of a comparable EMA. Designing an EHA into a pitch system allows designers to move more PV panels with fewer actuators and controls, resulting in lower installation costs and longer service over the life of the solar field.
CSP Solutions

1. **Hydraulic rotary tracker for CSP**
   - A turning motor that addresses the need for sun assembly of the solar array. Operate directly in the centerline of the field to select centerline or off-center locating.
   -

2. **Engineered hydraulic power units (HPPUs) and hydraulic cylinders for CSP tracking systems**
   - Specialized hydraulics power unit (HPPU) and hydraulic cylinders for CSP are engineered to withstand rain and sand contamination.
   -

3. **Portable hydraulic oil purification system**
   - Hydraulics system operating outdoors often suffer from precipitation along with dirt and sand contamination. Parker offers liquid filters and systems to extend the life of hydraulic pumping equipment.
   -

4. **Thermal management for PV electronics**
   - Parker’s custom liquid to air heat exchangers address the module heat removal and distribution challenge.
   -

5. **Electrohydraulic linear positioner for PV pitch control**
   - Parker’s advanced plunger also integrates EHA system control. Parker’s electrohydraulic linear positioners include a variety of valve options including high UV exposure.
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6. **Utility scale multi-megawatt field inverter for PV**
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PV Solutions

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Water energy is the power generated by flowing or falling water. Capturing it has traditionally taken the form of hydro dams, pumped storage reservoir installations, or river water wheels and is proven to be an efficient and cost-effective way to produce electricity. Now, work is also being done to harness the mechanical power held in the movement of the ocean with innovative and often unusual wave and tidal turbines.

Whatever the generation method, Parker is there with a wide range of motion and control systems and components. From cylinders that move the wicket gates in hydro dam installations and the array cables that export the electricity from ocean wave turbines to the transformer stations ... to the gearbox lubrication systems on tidal turbine generators and advanced, cooled electrical power conversion systems ... Parker has the experience, products, and technical competence needed to further the science of water energy. As well as the global presence necessary to supply and support its capture.

Subsea electrical array cables

When you’re generating electricity in the middle of the ocean, transporting the power can be a problem. But Parker Scanrope in Norway has a solution. The division manufactures mooring lines that both attach an ocean wave power generation device to the seabed and export its electricity to offshore transformer stations through subsea electrical array cables.

Parker Scanrope has years of experience producing and servicing products for the offshore industry. With its own quay to enable direct loading of the mooring lines and cables to the cable-laying vessels, Parker Scanrope combines expertise with flexibility to best serve its customers.
Harnessing waves, currents, and tides: Re-imagining one of the oldest forms of power generation

Look to Parker for:

Hydro Solutions
- Sharks need High-res FPO
- Add your own wild Inner airwater sealeffects, and then, through its function, enhance and complement the skills available to you.
- Parker has established dedicated renewable energy teams in the US and Europe, providing a highly-focused solutions approach to the renewable energy market. Parker’s significant presence extends across continents, Parker has delivered solutions into wave, wind, solar and smart grid applications.
- With one of the largest portfolios of products of any hydraulic equipment manufacturer, Parker has the experience and technical qualifications to assist in the design of systems, sub-systems and even individual components.
- Parker offers the world’s largest selection of products for renewable energy projects, enabling the export of large-scale 12MW spinning reserve and tidal power generation.

Wave/Tidal Solutions
- Sharks need High-res FPO
- The cylinders are critical components of your system, ensuring minimum footprint and easy installation.
- Parker’s systems position mirrored designs, ensuring minimum footprint and easy installation.
- Grid-Tie Systems Solar Energy
- Parker has been able to design and manufacture field serviceable modules, customized to meet specific needs.
- Our grid-tie inverter systems reliably capture variable power streams from photovoltaics, concentrating solar power, and concentrating solar power arrays on some of the world’s largest concentrating solar power plants.
- Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- In addition to our extensive experience in wave and tidal power systems, Parker’s significant presence extends across continents, Parker has delivered solutions into wave, wind, solar and smart grid applications.

PARKER'S ADVANCED, COOLED, AND SEALED IGBT COOLING
- The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- Installing Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

Hydraulic systems
- In an environment where Levelized Cost of Energy (LCOE) calculations and site-specific energy output are so critical, Parker has focused on improving efficiency and reliability, reducing the space requirements for power conversion and grid-tie systems.
- Parker’s systems are designed to be highly reliable and require minimal maintenance.
- Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

Wind—Offshore/Onshore
- Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- Installing Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

Specially designed hydraulic solutions
- Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- Installing Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

Grid-tie power conversion systems
- Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- Installing Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

Complete Wave and Tidal Power System Solutions
- With Parker's advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
- Installing Parker’s advanced, cooled, and sealed IGBT cooling. The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.

PARKER'S ADVANCED, COOLED, AND SEALED IGBT COOLING
- The self-contained cooling solution minimizes the thermal cycling of the IGBT modules, reducing the space requirements for power conversion and grid-tie systems.
Power Source: BIOGAS

Expertise that can turn biogas into energy

Originating from biomass, biogas is gaining increasing worldwide importance as a recognized renewable energy source. Biogas production is contributing – and will continue to contribute – to future energy supplies, replacing more and more fossil fuel sources such as coal, oil, and natural gas. Spearheaded by Germany, extensive work undertaken throughout many countries in Europe will lead to the perfection of biogas production. Parker’s extensive expertise in the areas of filtration, moisture removal, cooling and drying of bio, sewage, and landfill gases will play an important role in mainstreaming this critical energy resource.

Siloxane Removal System improves the profitability of biogas-to-energy projects

Biogas generated in landfills and waste digesters contains siloxane – a man-made chemical that changes into silicon dioxide when combusted. When landfill and digester gases are used to fuel turbines, reciprocating engines, and fuel cells that generate electricity, silicon dioxide buildup due to siloxane significantly increases maintenance costs, reducing the feasibility of these important green energy projects. Parker’s GES Siloxane Removal System eliminates siloxanes from biogas, reducing maintenance costs and improving profitability for greater cost-effectiveness.

Hyperchillers cool and dehumidify aggressive bio, landfill, and sewage gases

Parker Hyperchiller BioEnergy chillers offer high efficiency performance in aggressive landfill and sewage environments, with special protective treatment on the condensers and copper piping for reliable operation. They are particularly effective when paired with Parker tube bundle heat exchangers and Parker water separators.

These compact chillers have proven to be durable, with excellent reliability and flawless performance under many different operating conditions. Their closed water temperature operation provides high working limits and low running costs. Many options make them highly adjustable for specific operating conditions.
Pre- and post-filters
Our low-pressure raw biogas filter increases process safety by protecting the downstream gas units from dirt and particle contamination.

Water separator/de-mister
The biogas-resistant de-mister efficiently separates water from raw gases, allowing the downstream gas unit to drain aggressive condensate.

Condensate drain
A high-performance condensate drain removes water from the heat exchangers to control dew point.

Chiller
Our high-performance chiller provides chilled water to the heat exchangers to cool down the gases.

Energy storage cabinets
Pre- and post-filters are especially beneficial in storage systems, where they can assume various application response profiles in order to meet various demands.

Co-Generation
The IGBT-based Active Bridge Bidirectional Inverter assumes various application response profiles in order to meet various demands.

Solution:
Through the use of an industry accepted programmable logic controller (PLC) and Application Specific Control Logic, Parker Power Conversion Technologies in either a modular or a containerized configuration, are both time-consuming and expensive.

Solution:
A-LOK® tube fittings are designed for use on instrumentation, process, and control systems, specifically designed for use on instrumentation, process, and control systems.

Solution:
This patented technology and Parker’s Complete Piping Solutions maximize customer profitability.

Solution:
Parker Parflange® F37 non-welded connectors can be prefabricated and installed in a fraction of the time it takes for welded piping.

Solution:
Customer Advantage: Parker AC Drives control cooling systems, fans, and pumps. The application of this technology is growing among many different industries, including power-loss events, in compliance with IEEE 1547 guidelines.

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Solution:
Parker A-LOK® fittings with Suparcase® protect against leaks and minimize the risks of co-degradation, process and control systems,

Solution:
A-LOK’s rear ferrule resists inter-granular corrosion, improving the life of the entire system.

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Utility scale battery energy storage systems; advanced thermal management technology

Parker offers a full range of solutions for utility scale battery energy storage, from bidirectional grid-tie inverters to outdoor duty PCS (Power Conversion Systems) to climate-controlled battery containers. The product of more than 35 years of power conversion experience, our grid-tie inverter systems reliably charge battery banks during periods of low demand, and efficiently discharge them to the supply grid at a constant frequency as needed, while delivering exceptional power quality. Energy storage systems are often integrated with renewable energy sources such as solar and wind farms, but when combined with traditional generating sources, can provide benefits of lower emissions, better grid stability, and lower fuel consumption.

Applications:
- Frequency regulation
- Integration of renewables
- Micro-grid solutions
- Power factor control/VAR support
- T&D upgrade deferral
- Spinning reserve
- Black start

Look to Parker for:
1. Bidirectional grid-tie inverters
2. Integrated energy storage/battery containers
3. Outdoor duty power conversion systems
4. Thermal management for battery containers and power electronics

Applications include:
- Frequency regulation
- Integration of renewables
- Micro-grid solutions
- Power factor control/VAR support
- T&D upgrade deferral
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Energy storage system

Situation: Renewable sources of power may be cyclic or unpredictable, making them difficult to integrate with the power grid. Power may be generated when demand is low, but not during times of peak demand when it is most needed.

Solution: Utility scale energy storage can provide capacity firming, using energy stored in batteries to support the grid during peaks, and absorbing energy when the grid is at capacity. The capability to store energy can also eliminate curtailment or dumping of renewable energy when it is plentiful, but not demanded.

Customer Advantage: Maximize the net output of a wind or solar power installation, increasing revenue for the owner/operator.

Situation: Conventional power plants are required to maintain overload capabilities for periods of peak demand. Overload capabilities often include spinning reserve, fossil fueled generating resources that are kept idling even when not called for.

Solution: Utility scale energy storage can provide for the reserve capacity, without burning fuel or producing emissions. With sub-cycle response time and high round trip efficiency, the energy storage system can take the place of traditional reserves.

Customer Advantage: Satisfies requirements for overload capacity with less fuel used plant-wide, less emissions produced, and no moving parts requiring maintenance.

Situation: A projected increase over time in power usage will eventually make existing power transmission and distribution lines the “weak link” between power plant and customer. In time, if the power demand continues to increase as anticipated, it will require a costly upgrade in transmission hardware.

Solution: Utility scale energy storage can be quickly deployed near the load to reduce peak demands on the existing power lines. This resource addition can defer a major expense for a period of time. Parker’s containerized solution can be easily relocated once the upgrade is completed.

Customer Advantage: Expense to upgrade transmission line capacity is deferred.