RENEWABLE ENERGY
Energizing innovation in wind, solar, water, and biogas – worldwide
According to two recent reports on renewable energy trends 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 research and development (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.
- Hydroelectric power continues to grow globally, with some projections estimating that global hydropower production could double between now and 2050. Parker’s global hydraulic, connector, and filtration capabilities will provide significant growth opportunities.
- 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. With decades of experience in gas treatment installations, Parker continues to develop hydraulic, pneumatic, and electromechanical systems that deliver optimal results for biogas plant developers. Our significant portfolio of products and systems for biogas production increases methane content and improves the quality of fuel produced, maximizing revenue for plant owners.

YOUR CHALLENGES:
Cost, Efficiency, Availability, Utilization, Downtime.

OUR SOLUTIONS:
Reduced Time to Market • Global 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.

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, sub-systems, and components engineered to work together, producing a far more efficient and reliable energy generation system.

A condition monitoring early warning system that incorporates an iCountPDR – a robust Particle Detector. Parker EWS is designed to independently monitor system contamination trends and ultimately help protect hydraulic systems.

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.

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 maintenance, repair and overhaul (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 On-site 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 – Customized training sessions with qualified instructors.
- Renewable Center of Excellence – A global resource organizing and communicating best-in-class engineering practices for all renewable markets.
- Parker Tracking System (PTS) – Bar code identification labeling system helps you identify and order replacement custom hose assemblies faster.

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.

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.

SELECTABLE LEVELS OF INTEGRATION • FEWER SUPPLIERS
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 modern multi-megawatt wind turbines that utilize complex power electronics for grid frequency and power factor control, Parker’s two-phase evaporative cooling takes the performance of the power modules to a whole new level. With a rack-integrated design, the cooling system offers a multitude of benefits over traditional air or water-based cooling systems deployed today. These include:

- Increased power output of up to 40% from the same system with conventional cooling
- Virtually maintenance free – no filter, water, valves, bulb replacement
- Hermetically sealed and non-conductive – safer for electrical systems and service technicians
- Up to 50% more energy efficient
- Flexibility to mount in the nacelle or at tower base (inside or outside)

Driving power conversion

The Energy Grid Tie Division at Parker designs and manufactures state-of-the-art power converters and inverters for the renewable energy industry. These systems are critical to delivering clean, high quality, and compliant electrical energy to the transmission grid from variable power sources such as wind turbines, solar photovoltaic (PV) and solar concentrated photovoltaic (CPV) installations, as well as from storage reserves such as battery energy storage systems. Parker’s power conversion systems also play a critical role in grid stabilization as a higher percentage of renewable energy sources are integrated into the grid and demand loads vary constantly. In addition, these systems can provide kilovolt-ampere reactive (kVAR) compensation for optimization of power factor.
Look to Parker for:

- Power supply solutions that improve wind turbine reliability and performance
- Sophisticated solutions that improve wind turbine reliability and performance
- Energy management solutions
- Sealing and shielding solutions that improve wind turbine reliability and performance
- Hydraulic hose and fittings, steel and stainless steel, quick couplings, non-welded tube connections
- Functional application areas in wind turbine applications
- Condition monitoring systems
- Heat exchangers

Parker

- The company provides comprehensive fluid solutions designed around the specific requirements of wind turbine applications.
- Provides a wide range of products and services, including hoses, fittings, and couplings.

FUNCTIONAL APPLICATION AREAS

- Parker has product and system solutions for wind turbine applications that impact the following functional application areas:
  - Generator and gearbox
  - Blade and rotor
  - Nacelle auxiliary systems

Condition monitoring system

- A combination of fluid, vibration, and acoustic sensors, working in data collection and analysis, offers reliable monitoring and ensures the wind turbine is operating at peak efficiency.
- Parker's sensors operate in real-time, providing electrical, mechanical, and hydraulic monitoring for the health of the turbine and predict potential issues before they occur.
- Parker accumulators are designed and manufactured specifically for wind turbine applications, ensuring maximum performance and reliability.

Heat exchangers

- Parker has pioneered the industry's leading range of heat exchangers, designed specifically for the wind turbine environment.
- They are engineered to provide the highest efficiency while maintaining a compact and lightweight design.
- Parker's heat exchangers are specifically designed to withstand the harsh conditions of the wind turbine environment, ensuring reliable and efficient cooling.

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

- Gearbox and generator
- Blade and rotor
- Nacelle auxiliary systems
Advanced systems for photovoltaic (PV) and concentrated solar power (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 PV cells 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.
Power Source: SOLAR

Robust solutions that result in maximum power generation utilization

Look to Parker for:

1. **Concentrated Solar Power (CSP) Solutions**
   - Hydraulic rotary tracker for CSP
   - Engineered HPUs and hydraulic cylinders for CSP tracking systems
   - Portable hydraulic oil purification system

2. **Photovoltaic (PV) Solutions**
   - Thermal management for PV electronics
   - Electrohydraulic linear positioner for PV pitch control
   - Utility scale central inverter for PV

3. **CSP SOLUTIONS**
   - Engineered HPUs and hydraulic cylinders for CSP tracking systems
     - Specially designed HPUs for CSP
     - Electrohydraulic linear positioner for PV pitch control
     - Utility scale central inverter for PV

4. **PV SOLUTIONS**
   - Thermal management for PV electronics
     - Advanced two-phase PCS can be integrated into solar tracking controls to provide infinite speed control of both mirrors and frames to unsafe conditions. Parker variable speed drives can be configured and available with common AC drives for variable speed tracking.
   - Guardian® portable filter system
     - Increased bottle sampler for cleanliness monitoring
     - AC drives for variable speed solar tracking

5. **ENGINEERED SOLUTIONS**
   - Hydraulic accumulators for CSP and CPV tracking
   - Solar thermals and CSP inverter solutions enable integrated power generation with a single inverter, offering reliability and a fail-safe solution for on-site packaging.
   - Parker accumulator results in less wear and tear on solar tracking systems.
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 which have proven to be efficient and cost-effective ways to produce electricity. Today, 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.

**Micro-hydro: Harnessing the power of small rivers**

One of the most traditional methods to harness the power of water is with a water wheel. By transferring the power of flowing water from small rivers into rotational movement and spinning a generator, electricity in the range of 100 KW to 1 MW is produced.

Varying river flows result in inconsistent generator speeds, which prevent the generation of electricity at a constant frequency. Rather than regulating water flow to control the generator speed, a more cost-effective approach is to pass the signal through Parker’s power conversion system and produce regulated output at grid frequency.

The core of the power conversion system, Parker’s AC890PX inverter provides quality power by incorporating an advanced pulse-width-modulated switching technology, automatically synchronizing to the AC power grid. The insulated gate bipolar transistor-based active bridge bi-directional inverter within the system is actually even capable of delivering full power in either direction within 10 milliseconds, making it ideal for demanding applications like grid frequency stabilization. The efficiency of the inverter exceeds 98%.

**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 power from rivers, waves, currents, and tides.

Look to Parker for:

- Wave[Tidal] Solutions
  - Harnessing power from rivers, waves, currents, and tides.
  - Power Source: WATER

Hydro Solutions

- Hydro expertise
  - Hydroelectric power is the oldest form of renewable energy. From "macro-hydro" to "mega-hydro," Parker engineers design systems ranging from small hydropower systems to large-scale projects with critical technologies ranging from hydraulics, pneumatics, and electromechanical systems to sealing solutions used inside the turbine.

Hydraulic controls for turbines and generators

- Fluid conveyance
  - Parker’s hydraulic conveyance systems are essential to the overall operation of modern power generation systems. Fluid conveyance comprises the movement of fluids, usually water or hydraulic fluids, from one location to another, typically to or from a turbine or generator, to propel the turbine to upright operation.

- Bearing lubrication
  - Parker’s bearing lubrication systems are essential to the overall operation of modern power generation systems. Bearing lubrication systems ensure that the bearings in the turbine are properly lubricated, which is essential for the longevity of the bearing and the turbine as a whole.

- Gate actuation
  - Parker’s gate actuation systems are essential to the overall operation of modern power generation systems. Gate actuation systems allow the turbine to open and close, which is essential for the operation of the turbine.

- Paddle style wave harvesters
  - Parker’s paddle style wave harvesters are essential to the overall operation of modern power generation systems. Paddle style wave harvesters convert the energy from wave energy by using a series of rotating blades that capture the wave energy and convert it into electrical energy.

- Mooring lines and Subsea cables
  - Parker’s mooring lines and subsea cables are essential to the overall operation of modern power generation systems. Mooring lines and subsea cables provide the necessary support to keep the turbine in place and prevent it from moving in harsh ocean conditions.

- Tidal turbines
  - Parker’s tidal turbines are essential to the overall operation of modern power generation systems. Tidal turbines convert the energy from the tides, which is a renewable source of energy, into electrical energy.

WAVE/TIDAL SOLUTIONS

- "Wave attenuator" energy converters
  - "Wave attenuator" energy converters are designed to absorb the energy from ocean waves and convert it into electrical energy. Parker’s "wave attenuator" energy converters are designed to be installed in shallow water, where they can capture the energy from the waves and convert it into electrical energy.

- "Point absorber" wave energy converters
  - "Point absorber" wave energy converters are designed to capture the energy from ocean waves and convert it into electrical energy. Parker’s "point absorber" wave energy converters are designed to be installed in deep water, where they can capture the energy from the waves and convert it into electrical energy.

- Hydropower is the oldest form of renewable energy. From "macro-hydro" to "mega-hydro," Parker engineers design systems ranging from small hydropower systems to large-scale projects with critical technologies ranging from hydraulics, pneumatics, and electromechanical systems to sealing solutions used inside the turbine.

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- Grid tie power conversion systems
  - Grid tie power conversion systems are essential to the overall operation of modern power generation systems. Grid tie power conversion systems convert the electrical energy generated by the turbine into the electrical energy that is used by the grid.

- Fluid connectors
  - Fluid connectors are essential to the overall operation of modern power generation systems. Fluid connectors allow the fluids to be moved from one location to another and are used in conjunction with other systems to ensure the proper operation of the turbine.

- Hydromatic systems
  - Hydromatic systems are essential to the overall operation of modern power generation systems. Hydromatic systems are used to control the flow of fluids, which is essential for the proper operation of the turbine.

- DF Pumps
  - DF Pumps are essential to the overall operation of modern power generation systems. DF Pumps are used to pump fluids, which is essential for the proper operation of the turbine.

- Hydraulics
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- Accumulators
  - Accumulators are essential to the overall operation of modern power generation systems. Accumulators are used to store energy, which is essential for the proper operation of the turbine.
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 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.
**Look to Parker for:**

- **Filling the pipeline with gas**
- **Power Source: BIOGAS**

**Energy storage systems**

- Parker’s high performance biogas-resistant and biogas installations.
- Parker’s regenerative siloxane removal system from the gas stream, protecting the downstream gas engine.
- Parker’s PSA adsorption dryer ensures that the heated biomethane reaches a pressure dew point of -10°F to -40°F (-23°C to -40°C) to enable grid connectivity.

**Water separator/de-mister**

- Parker’s biogas-resistant de-mister purifies gas, providing maximum process safety and ensuring the extended life of the downstream gas unit. Parker filters are designed to offer both convenience and savings to meet customer requirements.

**Pre- and post-filters**

- Parker’s highly efficient and proven filters offer a wide range of choices to meet customer requirements.
- Parker’s Skid-mounted biogas chilling system (skid) are available with various element grades, specifically designed for use in instrumentation, chemical, and control systems.

**Tube bundle heat exchanger**

- Parker’s Parflange® F37 non-welded connectors can be prefabricated and installed in less than half the time of field welded piping.

**Tube bundle heat exchanger**

- Parker’s A-LOK® tube fittings are designed for use in instrumentation, chemical, and control systems.

**Siloxane removal system**

- Parker PTFE hose is designed to handle extremely high and varying temperatures, as well as media tracking and media compatibility requirements.

**Reasons to Parker**

- **Easiest installation**
- **Highest profit**
- **Longest life**

**Situation:**

- Raw biogas contains impurities and moisture that must be removed before use.

**Solution:**

- Parker’s highly efficient and proven filters offer a wide range of choices to meet customer requirements.

**Customer Advantage:**

- Easiest installation saves both time and money.

**AC drives**

- Parker’s Parflange® F37 connectors can be prefabricated and installed in less than half the time of field welded piping.

**Solution:**

- Parker’s high performance AC drives are designed for use in instrumentation, chemical, and control systems.

**Customer Advantage:**

- Parker’s Parflange® F37 connectors can be prefabricated and installed in less than half the time of field welded piping.

**PSA adsorption dryer**

- Parker’s PSA adsorption dryer ensures that the heated biomethane reaches a pressure dew point of -10°F to -40°F (-23°C to -40°C) to enable grid connectivity.
ENERGY STORAGE

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 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/volt-ampere reactive (VAR) support
• Ramp rate control
• Transmission and distribution (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

Advanced, refrigerant-based cooling

Our advanced thermal management technologies are key to our ability to offer efficient, cost-effective energy storage and power conversion. Specifically, with two-phase evaporative precision cooling, Parker has been able to cool the full range of wind and solar power generation systems, delivering up to a 40% increase in throughput and more than twice the power density, significantly reducing the overall space requirements for power conversion and grid tie systems. This closed loop, advanced cooling system uses a non-conductive, non-corrosive refrigerant that vaporizes on contact with hot electronics and cools more efficiently than any other air or water based system.

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: Maximizes 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 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.

Innovation in action

Outdoor duty power conversion systems

Parker provides outdoor-rated power conversion systems in sizes and ratings to suit applications from micro-grid to full utility scale. All enclosures are easily transported, deployed, and commissioned, and can be specified for the most extreme environmental conditions.

Integrated energy storage/battery containers

Configured to customer requirements for a variety of different battery systems. Parker delivers turnkey containers that include adaptive climate control, fire suppression systems, lighting, container hardening, battery racks, safety agency approvals, and tie-ins to power conversion systems.

Advanced thermal management for power electronics

Parker offers advanced two-phase “evaporative” liquid cooling technology to efficiently cool power electronics, using a modular cold-plate design for use with any inverter. The technology’s inherent efficiency can enable up to twice the density and can provide up to a 40% increase in power throughput from existing electronics, in a safer, more reliable solution.
Europe, Middle East, Africa

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North America

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<th>City</th>
<th>Phone Number</th>
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South America

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