



Welcome to the **blueplanet™**

World Class Quality

Headquartered in Neckarsulm, Germany, the KACO new energy group are specialists in the design and production of power conditioning devices. The largest part of our business is photovoltaic inverters. Our second largest product lines are power supply systems for automotive and aerospace applications. KACO's clients in these fields include global players like Volkswagen and Airbus. KACO new energy's product portfolio also includes custom inverter designs and inverters for CHPs (Combined Heat and Power plants), and battery based power supply systems. KACO inverters are in operation all over the world.

With more than 2.5 GW of grid-tied PV inverters sold world wide, KACO new energy is one of the leading global manufacturers in this field. Our international sales will surpass \$500 million in 2010 through strong sales growth at branches in the USA, Canada, Greece, Italy, Spain, Israel, China, and Korea as well as in our remote sales offices in other important markets like the Czech Republic and Australia, who distribute our company's products. KACO manufactures in Neckarsulm, Germany; Seoul, South Korea; and London, Canada. KACO will continue to secure jobs and employ a highly skilled workforce who create high-quality products. More than 500 employees contribute to the success of KACO new energy and its customers.

Another focus at KACO is our demanding attitude. For example, we have established a rigorous Quality Management Program to ensure sustained reliability of KACO devices. KACO customers expect PV inverters which have successfully passed extensive thermal and electronic testing processes under extreme conditions. These and other stringent corporate directives are inherent to the KACO corporate philosophy.

Innovation through Research

As early as 1999, KACO launched one of the first serial production PV inverters without a transformer. This made our company a pioneer in the field of transformerless inverter technology. In recent years KACO's US based engineers have developed industry leading transformer-based PV inverters specifically for the Americas.

Investments in research and development are part of the most vital components of KACO's business. We have established designated research teams in Kassel and Erlenbach, Germany for the further development of inverters up to a power class of 35 kW, as well as a new engineering team in Seoul, South Korea for the development and production of solar inverters of power classes from 50 kW up to 2 MW. KACO's world wide network of engineers collaborate with California based engineers to ensure the product range of KACO for the Americas is state of the art and configured for adherence to tough electric code standards.

We believe that even a high degree of efficiency cannot compensate for the damage caused by a failed inverter on a sunny day!



Tradition and Innovation



1914 Founded under the name of "Kupfer-Asbest-Companie Gustav Bach" - (KACO) built Germany's first dedicated factory to produce ring gaskets for use in the automotive industry.

1927 The product range is extended to include electronic conditioning products.

1940 The company starts focusing on the production of choppers & inverters, i.e. devices that convert direct current (DC) into alternating current (AC).

1944 -1945 In the wake of World War II the factory is destroyed and rebuilt.

1950 KACO becomes the world leader in the production of electromechanical choppers - today's inverters.

1953 KACO manufactures the first thyristor inverters.

1994 First development activities in PV inverter field.

1999 KACO inverter profit center re-establishes as an independent company under the name of KACO GERÄTE-TECHNIK GmbH.

2003 KACO GERÄTE-TECHNIK GmbH moves to its new facilities in Neckarsulm.

2004 KACO established KACO Solar, Inc. in the United States.

2005 KACO opens up its new Research & Development Center in Kassel, Germany and becomes the second largest PV inverter manufacturer in Germany.

2006 KACO ships first blueplanet 01xi series inverters to the United States.

2007 KACO launches a new research and development center for central inverters in Korea. New Sales offices open in Greece and Spain.

2008 KACO ships first 100 kW central inverters from new Korean factory. New Sales office opens in China.

2009 Reorganization as KACO new energy. KACO becomes second largest PV inverter manufacturer in Europe. New sales offices open in Italy, Israel and Turkey.

2010 KACO opens new inverter manufacturing facility in London, Canada. New sales office opens in France. KACO is among the top 3 PV inverter manufacturers in the world with over 1.5 GW built this year alone.

Products

Efficiency and Longevity

The KACO **blueplanet** product family offers a full range of inverter options. The **blueplanet** series is perfect for use in solar plants: from single family homes to solar parks in the megawatt range. The **blueplanet** series is supplemented by an extensive array of accessories for plant monitoring and communication.

KACO inverters feature innovative IGBT (insolated gate bipolar transistor) technology and patented MPP tracking algorithms to guarantee the highest conversion efficiencies. Since above average annual yields also depend on the reliability and longevity of the inverter, KACO exclusively uses high quality components: i.e. capacitors designed for use in high temperatures. All the printed circuit boards are permanently protected by a thin and extremely durable polymer coating.

The **blueplanet 02xi** inverter series includes four transformer-type products with a rated power of 1.5 – 5.0 kW. KACO offers these inverters for the US because galvanic isolation is still mandatory in some areas and offers advantages for use with thin film modules. KACO **blueplanet** inverters utilize high frequency transformers to condition power output. KACO will also be a leader in the introduction of reliable and cost effective transformerless inverters in the United States. State and national electric interconnection standards allow for the use of these devices and the KACO **blueplanet** brand is available to provide installers with their brand of choice.

The newest addition to the KACO North American line is the **blueplanet** XP central inverter. This inverter produces a rated power of 100 kW and is the first fully processor controlled PV inverter. Digital control and monitoring by digital signal processors ensures high reliability and efficiency even under unstable grid conditions. The proprietary software developed by KACO for the XP 100-U series can be configured in the field during installation to handle a host of grid conditions – for use all over the Americas.

blueplanet™ 02xi series



blueplanet™ XP 100-U



Performance

High efficiency:
Wide MPPT range:
Low start-up voltage:
Designed for max. ROI:

Ease of installation

easyinstall T-bracket:
Lockable DC/AC disconnect:
Multiple knock-outs:
Connection box:
Reduced weight:
Field selectable voltages:

Reliability

Split architecture design:
Sealed outdoor enclosure:
DC reverse polarity protection:
Redundant power capacitors:
Convection cooling:

blueplanet 02xi Series

95.5% CEC efficiency on all 02xi series inverters ensures low energy losses
Highest string sizing flexibility with all modules and temperature ranges
KACO inverters wake up earlier and work longer than the competition
Newest generation IGBTs and advanced MPPT algorithms

Minimizes mounting process to approximately 15 minutes
Save up to \$150 with the pre-wired & separable integrated disconnects
Knock-outs on bottom, sides and back offer great installation flexibility
Avoid costly channel raceways by directly connecting multiple inverters
KACO inverters are up to 50% lighter than comparably sized inverters
Use the same inverter in 208V, 220V or 240V grid settings

Power electronics are protected in a separate chamber
Protects power electronics from insects, dust, humidity and ocean air
Avoids potential damage to inverter caused by miswiring during installation
Increases the lifetime of your inverter
No moving parts increases the uptime of your PV system

Performance

High efficiency:
Variable speed fans:
Floating Point DSP:
Variable structure PWM:
Complex MPPT algorithm:
Full digital control:

Ease of installation

Easy handling:
Integrated DC recombining:
Pre-set parameters:
Internal 24V power supply:
Polycarbonate safety shields:
Reverse polarity protection:

Reliability

Redundant power supplies:
Power capacitors:
Split architecture design:
NEMA 3R enclosure:
Surge protection (SPD):
Modular IGBT stack:

blueplanet XP 100-U

96% CEC efficiency - generate fast return on investment
No unnecessary cooling - decrease internal power consumption & increase uptime
Reduce total harmonic distortion and provide more accurate AC power control
Reduce IGBT switching losses by up to 20% when compared to other PV inverters
Maximum MPP accuracy during dynamic weather fluctuations
Total transparency of inverter functions - faster reaction time and increased uptime

Use a fork lift or crane the XP 100-U fits through most standard double doors
Configure inverter with 4x 100A, 3x 125A, 2x 200A or 1x 400A fused DC inputs
Save time and labor costs - one step configuration with TFT color touch screen
Avoid extra cost of external power supplies for monitoring & accessories
Protect installation crews from high current / high voltage bus bars & connectors
Avoid potential damage to inverter caused by mis-wiring during installation

Increase reliability and uptime - no single point of failure for fans and control boards
Film capacitors are designed for the 20 years life of the inverter
Power electronics are protected in a separate chamber
Stainless steel option for coastal installations
Remotely monitored SPDs on all AC & DC inputs for better preventative maintenance
Power devices, gate drives, and other critical components are integrated into easy to swap building block for fast maintenance and increased reliability



CO₂-neutral Production

Welcome to the blueplanet™

Solar inverters made by KACO generate clean energy. We continually strive to minimize – and ultimately hope to eliminate – production of all harmful green house gas emissions in the production, transportation and distribution of our products and services. With over 390 kW of installed PV power on KACO's facilities, the company's photovoltaic plants almost feed more energy into the grid than is consumed in all the production facilities. The heat for these facilities is produced at a wood-chip CHP (Combined Heat and Power Plant), and additional electricity is bought from an eco-power provider. This electricity is also used to power the company-owned electric vehicles used by the staff members to commute between the company premises. To compensate for harmful emissions caused by business trips, KACO supports the international "myclimate" initiative, which supports projects responsible for the direct reduction of green-house gases.

In the US, KACO is a certified Green Business in the San Francisco Bay Area and actively engage all KACO team members in ways to reduce, reuse and recycle all sales and marketing related activities and products. All paper products are printed on recycled paper stock and whenever possible KACO chooses digital instead of paper marketing.

Committed to Better Life for All Mankind

KACO works to better our environment, and is also committed to helping create a better life for all mankind. Through financial donations the company supports the victims of terror in Beslan, for example, as well as the Target organization initiated by Rüdiger Nehberg, which fights female genital mutilation throughout Africa. KACO donates products to solar training facilities and organizations working to better the lives of under privileged people world wide.

KACO's corporate culture is unique. All employees participate in the company's profit-sharing program. The company offers free organic fruit in winter and free soft drinks in summer. Annual marathons are a favorite of European employees, for which a team of company members train regularly. In addition, KACO hosts annual two-day company excursions for all employees and their families as well as annual tree planting days. The corporate philosophy of KACO directs all employees to maintain a healthy work / life balance and encourages positive lifestyle choices that make for a better day, every day.

In addition, KACO is engaged in political work related to increasing the world wide use of solar electricity. KACO regularly invites politicians to tour the factories and to exchange views. Senior management takes part in panel forums and engages in political discussions world wide. KACO financially supports solar business associations around the world including the US based SEIA and CALSEIA among others.

Conclusion

KACO new energy produces inverters while adhering to the following stringent environmental and social requirements:

- 100% Free of nuclear power
- 100% CO₂-neutral
- 100% Committed to environmental protection
- 100% Involved in our local communities

References

KACO **blueplanet**[™] inverters yield peak efficiencies on all continents – and this is not just limited to the sun-belt regions of the world. For example, a photovoltaic plant powered by KACO inverters in Simbach (Bavaria) is producing power every day and is only one of many plants located in regions all across the globe that are not blessed with abundant solar resources like Spain or California. KACO inverters operate today world wide and below you will see a few of the systems we are proud to share with you.



NASA Space Center
Houston, TX, Plant capacity: 30 kW



Simbach, Germany
Plant capacity: 1 MW



Health Care Cost Containment Building
Phoenix, AZ, Plant capacity: 100 kW



Florida Keys Electric Cooperative
Marathon, FL, Plant capacity: 96 kW



Kangwon, Korea
Plant capacity: 120 kW



Ciudad Real, Spain
Plant capacity: 2 MW



Florida, USA
Plant capacity: 4 kW

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