



SIG SOLAR GROUP

**ENERGY
EFFICIENCY
INNOVATION**

**PHOTOVOLTAICS
PROJECTS | EPC
SERVICE
LED
ENERGY STORAGE
INNOVATION
E-MOBILITY**



„We want to actively participate in energy transition –
with more efficient production and use of renewable energy“

Jan-Christian Schröder
Managing Director SiG Solar Group



ENERGY, EFFICIENCY, INNOVATION – A POWERFUL GROUP OF COMPANIES

SIG SOLAR GROUP – THE FUTURE UNDER ONE ROOF

The SiG Solar Group combines a number of system solutions for the efficient use of renewable energy under one roof. Since its foundation in 2004, SiG Solar feels responsible to do its share to change global energy supplies to renewable and clean energy. Based on SiG Solar’s core competence photovoltaics – SiG Solar positioned the group of companies in the future market segments. In partnership, sustainable and future-orientated –

SiG Solar realizes synergies. In addition to selling photovoltaic products and relevant solar services – from selling Sun Earth modules over building power plants to operating and maintain them – SiG Solar also offers services and products covering the whole range of efficient energy usage, such as e-mobility, LED technology, energy storage, charging stations or solar carport systems.



SIG SOLAR GROUP

PHOTOVOLTAICS

Certified reliability with Sun Earth – our products show who we are

PROJECTS | EPC

Engineering, procurement, construction – reliable realization of large solar power plants

SERVICE

Operation & Maintenance, cost and operational reliability of completed projects

LED

The lighting of the 21st century – we believe in innovations with maximum energy savings

ENERGY STORAGE

Store energy from the sun with SunStorage and use it whenever you need to – one of the key technologies of the energy transition

INNOVATION

Solar carports, charging stations – conserve resources, live the future

E-MOBILITY

Forever fun – Classic scooter feeling not tied to fluctuating fuel prices

COMMITMENT

The SiG Solar Group as a team player between sports and cultural sponsorship



TWO PARTNERS WITH ALMOST A CENTURY OF EXPERIENCE

*SiG Solar and Sun Earth – High-tech production
from China combined with technical engineering
from Germany*

FROM 2014 TWO GIGAWATTS PER YEAR

Progress instead of stagnation – a resolution to which Sun Earth Solar Power Ltd. is dedicated. Investments of billions of Euros have made the Chinese photovoltaic manufacturer Sun Earth Solar Power to one of the largest module manufacturers in the world. The latest expansion with fully automated and fully integrated top class production facilities will lead to a yearly production capacity of 2 GW in 2014. German quality management made by SiG Solar guarantees European quality standards and reliable production processes. Sun Earth and SiG Solar – a partnership of equals.



SUN EARTH MILESTONES

- 1966** Establishment of semiconductor production in Ningbo. Development of the first solar cells
- 1970er** Use of the technology in space
- 1978** Entry into the production of PV modules
- 1999** Foundation of Ningbo Solar Electric Power Co. Ltd and entry into module's sales for non-governmental use
- 2004** SiG Solar becomes the most important distributor for Sun Earth in the German and European PV market
- 2005** Certification of Sun Earth modules to CE, TUV, IEC, CUL and Golden Solar standards
- 2005 - 2010** 1 billion Euros invested in production
- 2006** Construction of advanced high-tech production facilities for PV modules covering 80,000 m²
- 2007** Entry into the production of silicon
- 2009** Expansion of production lines for solar cells and PV modules to 450 MW
- 2010** Change of name to Sun Earth Solar Power Co. Ltd.
- 2011** Reaching the annual production capacity of approximately 1 GW
- 2012-2014** Construction of a new manufacturing plant with a capacity of 2 GW

THE SIX SUN EARTH ADVANTAGES

1. POSITIVE POWER TOLERANCE

Photovoltaic modules from Sun Earth have an outstanding positive power tolerance of up to +10 Wp.

2. FULLY INTEGRATED PRODUCTION

From the manufacture of poly-silicon to the production of ingots, silicon wafers and solar cells to the integration of PV modules, the manufacturing process at Sun Earth is gapless.

3. RESISTANCE TO THE ELEMENTS

Every Sun Earth PV module must operate reliable for decades, and in all weathers and under all temperature fluctuations. Therefore, Sun Earth solar modules are subjected to the most demanding load tests.

4. MATERIAL CONTROL

Sun Earth modules are manufactured using only the best materials. An important basis for this is the regular monitoring of all suppliers.

5. MAINTENANCE

Since there are no parts that suffer wear and tear, Sun Earth modules are virtually maintenance free.

6. FLEXIBILITY OF USE

Sun Earth modules have been proven for the most diverse uses – from small rooftop systems up to megawatt power plants on open land. Also, salt spray and ammonia tests expressly permit the use of Sun Earth modules close to the sea and on agricultural land.

SUN EARTH MODULES CONVINCE THROUGH PERFORMANCE

Solar modules are the heart of every photovoltaic system. Demands on durability, reliability and performance are high. Sun Earth photovoltaic modules are among those with the most stable performance and are therefore the most profitable on the market.



SUN EARTH®-MODULE
monocrystalline



SUN EARTH®-MODULE
polycrystalline

DIEHL AKO AND SIG SOLAR: THE PERFECT INTER-RELATION



For every application in photovoltaics the right inverter is available by SiG Solar. We work closely together with our partner Diehl AKO. The technical competence of our partner coupled with our versatile know-how in photovoltaics creates decisive advantages for our clients: for their PV-plants – whether small or megawatt plant – they get optimal fitting and the most efficient inverter.

MAXIMUM
EFFICIENCY:
98%!



CERTIFIED SAFETY FOR PRODUCTIVE DECADES

Damp-Heat Test IEC 61215 10.13

Result: The modules exceed the requirements by the factor of three in regard to environments with intense damp/heat.

Thermal Cycling Test IEC 61215 10.11

Result: The modules exceed the requirements in regard to temperature fluctuation and three times extended performance time.

Mechanical Load Test IEC 61215 10.16

Result: Sun Earth PV-modules' structural engineering sustains above-average loads.



OUR FOCUS: LARGE-SCALE POWER PLANTS



GENERAL CONTRACTOR (EPC) WITH FINANCE COMPETENCE

At SiG Solar experience meets competence. SiG Solar Projects is a leading specialist in realization of solar power plants in megawatt scale. With SiG Solar Projects you get a combination of international expertise and high-quality components with German engineering know-how. We are the general contractor with financial expertise. Investors, financial institutions and industry partners see us as a reliable partner in the realization of their projects.



OUR THREE PILLARS FOR QUALIFIED PROJECT REALIZATION

EPC

The EPC portfolio of SiG Solar Projects provides a comprehensive support in every phase of your solar power plant project. As a turnkey partner and general contractor SiG Solar Projects offers project management, planning and installation of PV-Plants in megawatt range. Many years of expertise in project planning and implementation of large projects worldwide on roofs and green fields makes SiG Solar Projects a reliable partner for secure investments. The international focus of the company group enables an extensive support of PV projects in all stages of project development.

PROJECT FINANCE

Added value through financial competence: SiG Solar Projects provides reliable security for cash flows through collaborations with equity and debt capital institutions.

SPECIAL SOLUTIONS

Development and realization of innovative strategies in system solution for special tasks in the field of renewable energies



REFERENCES / SELECTION				
Location	Filiano, Italy			
	1 MWp			
	235 Wp			
Peak power	Sun Earth® Poly			
	Serra S. Antonio, Italy			
	2 MWp			
Modules	180 Wp			
	Sun Earth® Mono			
	Anzi, Italy			
Location	1.5 MWp			
	235 Wp			
	Sun Earth® Mono			
Peak power	Satriano di Lucania, Italy			
	2.5 MWp			
	180 Wp			
Modules	Sun Earth® Mono			
	Avigliano, Italy			
	3.5 MWp			
Location	180 Wp			
	Sun Earth® Mono			
	Revello, Italy			
Peak power	1.23 MWp			
	180 Wp			
	Sun Earth® Mono			
Modules	Murello, Italy			
	1.14 MWp			
	185 Wp			
Location	Sun Earth® Mono			
	Cuneo, Italy			
	1.28 MWp			
Peak power	185 Wp			
	Sun Earth® Mono			
	Tito, Italy			
Modules	2 MWp			
	180 Wp			
	Sun Earth® Mono			
Location	Mottola, Italy			
	3 MWp			
	180 Wp			
Peak power	Sun Earth® Mono			
	Castellaneta, Italy			
	1 MWp			
Modules	180 Wp			
	Sun Earth® Mono			
	Massafra, Italy			
Location	1 MWp			
	180 Wp			
	Sun Earth® Mono			
Peak power	Almería, Spain			
	7.7 MWp			
	175 Wp			
Modules	Sun Earth® Mono			
	Passau, Germany			
	500 kWp			
	175 Wp			
Location	Sun Earth® Mono			
	Soria, Spain			
	2.2 MWp			
Peak power	170 Wp			
	Sun Earth® Mono			
	Burghausen, Germany			
Modules	1 MWp			
	170 Wp			
	Sun Earth® Mono			
Location	Malgersdorf, Germany			
	331 kWp			
	170 Wp			
Peak power	Sun Earth® Mono			
	Rassbach, Germany			
	560 kWp			
Modules	165 Wp			
	Sun Earth® Mono			

OPERATION & MAINTENANCE



**SIG SOLAR SERVICE:
QUALIFIED EXPERTISE**
 Certified electricians (TÜV)
 Officially approved reviewer for PV (TÜV)
 Experts in home installations (DESAG)
 Electrical engineers

OUR CORE VALUE
 Regular training and
 education of all employees
 in all positions



FOR INDIVIDUAL REQUIREMENTS AND MAXIMUM YIELDS

SiG Solar Service is driven by the wishes of its clients. From monitoring to technical service SiG Solar Service provides a broad portfolio. The achievement of power generation targets of power plants is top priority. SiG Solar Service uses the newest technologies to reliably monitor PV systems of all sizes. The mobile operations team from SiG Solar is highly qualified, internationally approved and fast available, to minimize times of disruption and losses of function as well as optimize power generation.



CONTACT-FREE
MONITORING WITH
AERIAL ROBOTS

MONITORING & REPORTING

- Remote monitoring of plant operating data
- Data acquisition and analysis
- Analysis of default messages
- Troubleshooting
- Documentation and reporting
- Monitoring and optimization of efficiency

QUALITY CONTROL AND REPORTS

- Survey reports
- Performance measurements
- Defect reports
- Performance ratios
- Thermographic analysis
- Mobile electroluminescence testing

PREVENTIVE MAINTENANCE & CARE

- Scheduled maintenance and repair work
- Spare parts management
- Inspections of inverters, modules and all components
- Grass cutting
- Module cleaning & removal of organic and inorganic deposits
- Optimization of system equipment
- Security and protection

WARRANTY PROCESSING & REPAIR

- Damage assessment and elimination
- Handling of Sun Earth warranties
- Support for insurance and warranty services for all manufacturers
- Onsite repair service

SIG SOLAR SERVICE

ENSURING
 outcome forecasts for solar power systems for decades

OPTIMISING
 the yield of the solar power plant

REDUCING
 operating costs and signs of wear

MAXIMISING
 panel performance

LUMITENSO

LED MADE IN GERMANY

LIGHTING OF THE NEXT GENERATION

LED lights are becoming increasingly popular. The most state-of-the-art, innovative technology combined with incredible energy-saving potential – that's the lighting of the 21st century. LED lights have been more than just tools for designers and architects for some time now. Dimmable, durable, economical, recyclable and bright, they are the alternative for all comparable lights, even to previous generations of LEDs. LUMITENSO offers a variety of unique lighting solutions for flexible use in industry, offices, communities and homes.

PERFECT LIGHTING SOLUTIONS BY LUMITENSO

INDOOR

TUBES,
HIGH-BAY, PANELS,
BULBS

OUTDOOR

EXTERIOR LIGHTING
FOR CITIES, STREETS
AND PARKS



BETTER QUALITY OF LIFE THROUGH TECHNOLOGICAL CHANGE

- Made in Germany
- Up to 85 % savings on energy costs
- High quality thermal management with low heat generation
- Full light output immediately
- Long life time
- Mercury-free
- Reduction in CO₂-emissions
- Patented control technology
- High shock and vibration resistance
- Water and ammonia resistant



[SUNSTORAGE]

STORE YOUR OWN ENERGY

The innovative energy management of our SunStorage systems makes it possible to reliably store energy from the sun and retrieve it whenever you require it. Be it during the day, in the evening, at night or just when it's overcast, you can take advantage of low-cost solar power at all times, making yourself independent of price increases from energy utilities.

SunStorage offers a unique portfolio that can be optimally tailored to the individual demand profiles of private customers and commercial clients. Long-lasting and powerful, the SunStorage **FLEX**, **SMART** and **PURE** models deliver solar power around the clock and can be expanded modularly.



COST-EFFECTIVE STORAGE SYSTEMS, MADE-TO-MEASURE

SunStorage does not just provide one system, unlike the competition, but rather offers the full range of energy storage systems from a single source. Whether it's a single-phase or three-phase connection, AC or DC coupled, a new or existing PV system, 2 kWh or 30 kWh, lead or lithium-ion battery: You always receive a technically and economically optimised storage solution that meets your requirements.

THE SUNSTORAGE CONCEPT AT A GLANCE

- Broad product portfolio for new and existing PV systems
- Suitable for use in private households, small businesses and agricultural enterprises
- System design of solar power system and energy storage system based on your specific demand using the specially developed configuration tool SunCulator
- Fully automatic systems for optimising self-consumption and a maximum degree of independence
- Easy to operate
- High-quality, recyclable materials
- Can be expanded modularly



SMART
Versatile and communicative



FLEX
Modular and flexible



PURE Pb
Reliable and scalable



PURE Li
Reliable and scalable



SUNTREE BY SIG SOLAR

THE INNOVATIVE CARPORT SYSTEM OF THE FUTURE



NEW SURFACES FOR PHOTOVOLTAIC

Photovoltaic is the energy of the future. Electric mobility is on the rise. And with SunTree, SiG Solar already has the appropriate carport system that meaningfully connects both innovations. SunTree realizes new added value – both practically and financially – to surfaces that are already paved and used in parking places, cities and parks.

Whether for homeowners, municipalities and cities, or for companies – the modular carport systems of SunTree protect your parking area from the effects of the weather, provide shade on hot days and at the same time provide additional revenues by generating energy.



SUNTREE BASIC

Turnkey solution with parking space for two cars, e.g. for homeowners

SUNTREE ADVANCED

Practical use of large parking areas at supermarkets, shopping centers or companies

SUNTREE FLEX

Customized system solutions based on SunTree know-how

SUNTREE OPTION

Digital advertising, integrated charging station for e-mobility, LED lighting, RFID technology, oversized for trucks, etc.

E-MOBILITY: ELECTRIFY YOUR LIFE

OUR E-SCOOTERS

With the trendy electric scooters from etropolis, you can get to your destination in the best possible way. Fill up at the socket, save yourself unnecessary maintenance costs, free yourself from fluctuating fuel prices and feel the wind in your hair. By doing away with CO₂ emissions, you are making an important contribution to environmental protection. We are convinced that the mobility of the future is electric. Focus on the future and live life the way you want to. Without limits. But with a generous helping of fun!

With etropolis scooters, you can find the style that suits you. Whether you want a trendy retro look or are devoted to futuristic design – the choice is yours. Our etropolis models are available from the basic version in a variety of colour combinations. All etropolis versions can be adapted individually and are available with silicon or removable lithium batteries. Whether at home or at work – the removable batteries of our lithium models can be recharged at any conventional mains socket.



Now also available with removable lithium polymer battery

ETROPOLIS BEL AIR AND RETRO LITHIUM

Completely noiseless, completely without emissions – become a trendsetter on our roads!



NEO 29ER AND CITY

For mountaineers and city shoppers – enjoy up to 100 km assistance with our high-performance lithium ion batteries.

OUR E-BIKES

E-bikes from etropolis can be used flexibly both at work and leisure. Additionally, they also combine exercise with the exciting thrust of an electric gear. Just start pedalling like on every conventional bike. There is just one decisive difference: As long as you are pedalling, you will automatically get an additional boost of energy. Don't worry about steep roads and strong headwinds anymore – just enjoy the ride!

etropolis GmbH is one of Europe's leading specialists in two wheeled electric vehicles and is based in Stuhr/Bremen, Germany. etropolis offers a broad portfolio with a high degree of quality and performance ranging from pedelecs and classic e-scooters to high-performance electric motorbikes. Being part of SiG Solar Group, etropolis profits from many years of experience in international trading. Both companies are built on Hanseatic foundations: commercial dependability, quality and the quest for innovation.



etropolis

SIG SOLAR GROUP:

IN PARTNERSHIP, SUSTAINABLE AND FUTURE-ORIENTED

As a medium-sized family company shaping the future is of particular concern to us. We feel responsible to contribute, with the best of our ability, to efficient use and generation of clean energy. The basis for long-term success are clear yet flexible structures implemented by a high performing, growing and motivated team,

combined with decades of experience in quality, service and production management. We take our social responsibility seriously. Whether through reliable cooperation with innovative partners or by strong commitment through sponsorship of culture and sports – we go jointly into the future.



OFFICIAL PARTNER OF WERDER BREMEN

We want to minimize the ecological footprint and started in Bremen's Weser stadium. With the sponsorship partnership in the German Football League, SiG Solar makes the public aware of a clean and emission-free future. The sport sponsorship with SV Werder Bremen is only the tip of our commitment to sport. A number of broad-based sports teams also profit from support by our North German group of companies – from handball to football and volleyball as well as the runners-up in the German netball championship.


ARTS SPONSORSHIP

In 2012 SiG Solar made it possible: the world's first emission-free video art project in Italy. The artist Fabrizio Plessi used solar energy to create virtual worlds for the first time. The combination of arts and renewable energy creates new synergies on the way to a cleaner future.



„Go with us jointly into the future.
Because we support synergies, live
partnerships and make use of the sun
for the efficient generation and use of
the valuable resource energy.“

Schröder Family
Owner of SiG Solar Group



SIG SOLAR GROUP
Ernst-Abbe-Straße 6
28816 Stuhr / Germany
T +49 421 / 27 83 777
F +49 421 / 27 83 779

info@sigsolar.com
www.sigsolar.com