



www.solarqualitypassport.com



SOLAR QUALITY PRODUCTS IN PAKISTAN

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Dear friends of solar energy,

Pakistan is truly blessed by the sun! With a strong solar irradiation of approximately 4 Kwh/m² per day, the many hours of sunshine daily, allow substantial use of photovoltaic solar energy as a source of electricity. It is time to seize this opportunity to fully exploit Pakistan's solar potential and take advantage of the fact that solar photovoltaic has become the most competitive energy worldwide.

With a properly installed photovoltaic installation, free energy can be provided for at least two decades. After the typical return on investment solar power will provide free electricity with extremely low maintenance costs for the remaining years.

The quality of the solar energy provided, however, depends on the quality of both the components used and the quality of their installation. The quality of these two factors determines the lifespan and yield of the implemented solar system. The Solar Quality Foundation (SQF) has taken on itself the responsibility to help consumer's select certified products and recognize installers for best performance.

SQF in cooperation with the Renewable & Alternative Energy Association of Pakistan (REAP) and with the German Solar Association (BSW-Solar) has developed this guide that provides you with information of the companies that offer top quality solar photovoltaic products and services in Pakistan to help you to take the best investment decision that gives you the maximal technical potential and a long life of your PV system.

A long-term investment like a solar system requires thinking long term. While a focus today is often on price alone, our experience show that it is the costs and yield over time that really determine a successful investment in PV. Sometimes, if you buy cheap, you end up paying twice – the initial investment has to be followed with costs of repairs or replacements down the line and you end up paying double. We work hard to prevent that with the Solar Quality Passport.

As an investor, this information is important for you to make a secure choice on PV systems and facilities. Your achievement will reflect when your photovoltaic solar system will save you energy cost in the long term. We wish you good luck with your investment decision and hope you make use of solar PV as much as you can.

Best wishes,

Ishaq Bhatti
President, Solar Quality Foundation

David Wedepohl
MD, BSW-Solar

Colonel (R) M Tariq Khattak
Chairman, REAP

¹ Typical return on investment for a solar system is 4 to 8 years depending on the size of the installation. Annual returns can be calculated by dividing the financial benefits received each year by the initial investment in the solar PV system.

GO SOLAR!

Solar energy is a sustainable solution to meet increasing energy needs. In one hour, more energy in the form of sunlight falls on the earth than energy is consumed by the world's population in one year. A solar system is a combination of electronic components that converts energy from the sun into other forms of useful energy e.g. heat or light. There are two kinds of solar systems:

- A Solar Thermal System (ST) converts energy from the sun into heat
- A Solar Photovoltaic System (PV) converts energy from the sun into electricity

This publication focuses on PV.

A solar PV system is a long term power solution that gives access to affordable electricity supply to consumers. A solar PV can be used for different applications, including commercial, residential as well as off-grid / remote users. When it consists of quality components and is installed correctly, such a system is superior to many conventional energy solutions. This is true for pricing, reliability and lifespan. Quality solar PV is a tried and tested technology, with long system life. It requires little maintenance as it has no moving parts. In addition, solar energy does not add to local air pollution, and as a renewable source has a positive impact on the environment.

INTENT OF THIS PUBLICATION

This brochure is designed for consumers, both residential and those from commerce and industry as all can benefit from solar energy. Its aim is to create awareness and understanding of quality solar PV products, how consumers can identify quality solar products, which brands are reliable and which suppliers can provide these brands in Pakistan.

SOLAR PV SYSTEMS

There are roughly 2 types of solar PV systems:

- 1. Off-grid solar PV systems:** Most suitable for rural areas where grid is not available or unreliable. This includes solar home systems, solar mini-grids, solar lighting kits and pumping systems for drinking, livestock and irrigation applications. As a rule of thumb – if you are replacing or complementing existing diesel generators in an off-grid system, PV electricity is more economic. Increasingly, larger off-grid systems are built to provide enough energy for productive use, even manufacturing or for temporary use for instance when supplying the mining industry. Sometimes, an off-grid application is more economic than building a grid to a remote area. More and more of these systems make use of battery technology as well.
- 2. On-grid solar PV systems:** On-grid systems also called grid-tied systems are solar PV systems connected to the utility grid. They can range in systems from a residential home to large manufacturing sites. These systems are especially effective in business hours where operational hours are during the day e.g., residential sector, schools, colleges, businesses and commercial buildings. They are economic because they can save on the energy bill overall, reduce the peak load a building or entity draws from the grid and also if combined with batteries can increase the power quality to protect delicate and often expensive machinery. Energy produced in excess from on-grid systems can be transferred to the national grid according to specified tariffs under NEPRA's Net-Metering regulations for systems in the range of 1 kW to 1000 kW or under specified PPA tariffs for large scale utility solar projects.

WHY QUALITY MATTERS FOR SOLAR PV?

Quality PV is a measure of excellence that lowers the risk of defects and deficiencies. Low quality PV systems require frequent repairing or even replacement, which ultimately raises the cost over the lifespan of the system. Quality problems in the installation could potentially lead to injuries and also damage to property or even the risk of electric shock or even create a fire hazard.

WHAT DOES QUALITY MEAN IN THE CONTEXT OF SOLAR PV?

A quality solar PV system is one that has 3R attributes:

- Right Design: qualified and experienced engineers have designed the system utilizing proper design software;
- Right Installation: system is installed by trained professional installers according to the design and under supervision of qualified engineers;
- Right Components: The system consists of only quality components that are safe and have a long lifespan.

INVESTING IN A SOLAR PV SYSTEM

Key points to keep in mind:

1. Always ask suppliers and installers for system / equipment and power warranty;
2. Always ask suppliers for "certified components by TUV organizations, Underwriters Laboratory any other similar agency. The following symbols are some quality marks to look out for:



• Qualified IEC 61215
• Safety tested IEC 61730
• Periodic Inspection



CERTIFIED
IEC
61730 Ed.1

CERTIFIED
IEC
61215 Ed.2

3. One helpful tool is Solar Quality Passport which covers most of the tips below for peace of mind (see further information in page 6).

With a target service life of at least 20 years, the quality of the components and the installation work is an important factor. It is suggested to obtain 2-3 cost estimates from different specialist companies. The best thing of course is to get a system with the Solar Quality Passport which includes quality components and installation so you do not have to worry about the details.

Other possible precautions that can be taken:

- Prepayments are customary shortly before delivery and further payment in steps upon delivery and after successful installation is common practice in the solar industry. However, you should never make an advance payment without appropriate securities.
- Obtain references: Inform yourself about the experiences with the solar systems installed by the installation company and, if possible, talk to the operators.
- Be careful with allegedly brand-new, innovative products from manufacturers unknown to the market that are supposed to achieve a lot without having practical experience or verifiable reference systems.
- Use the Internet to obtain information on products and suppliers - often there are already lively discussions in the relevant forums about dubious offers and suppliers.
- Do not allow yourself to be put under (time) pressure when deciding on a system and take a close look at the contract with the service description.
- Make sure that a functional check of the system is carried out during operation: If there is a reduction in performance (e.g. due to failure of components), this should be determined quickly. A solar system performance indicator is energy (kWh) provided at full load and not the capacity (peak power watts) of the solar PV panels. For any PV solar system design, the energy (kWh) provided at full load depends on ratings of solar PV panels and batteries. The installer should explain this to you and offer a yield prediction. A vendor / system provider / supplier who provides guarantee of energy (kWh) yield at full load as well as the maximum load (kW) that the solar system can bear for at least first 8 years should be preferred.
- The installation company should instruct you in the operation of the system. Relevant operating states must be explained, tests to be carried out by you as the system owner (e.g. monaural yield data collection etc.) should be explained. A comprehensive protocol of the PV system installation should be carried out as standard and given to you in writing.
- Be sensitive to exaggerated promises made by installation companies. For example, companies that (even with a good roof orientation and high-quality solar modules) promise you an annual yield of over 1600 kWh per installed kWp for large parts of Pakistan are to be treated with great caution. Blanket statements about the yield or savings are not serious anyway without knowledge of the specific framework conditions, including shading. As a rule of thumb, however, even in "prime locations" and with optimum framework conditions (panel orientation, high-quality and proven component selection, good coordination between module and inverter, plant in sunny location, etc.) should not be calculated with forecasts of long-term significantly more than 1450 kWh per kWp.



PAKISTAN SOLAR QUALITY PASSPORT (SQP)

Poor quality, underperforming and unreliable solar products and installation hamper the Pakistani PV market. Customer satisfaction and the image of the industry are affected. A broad-based private sector initiative led by the Solar Quality Foundation (SQF), supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, has therefore taken up the challenge together with partners such as the German Solar Association and Stimulus Pakistan, to develop a concept that will significantly improve quality in the Pakistani solar market.

The SQP has been designed to provide system owners with confidence that the installers who issue the passport will act in compliance with all applicable national policies, regulations and standards. With the completion of each installation, the signed and thoroughly elaborated SQP is handed over to the customer.

The Pakistan Solar Quality Passport does not replace any warranties given by manufacturers, but will ensure that the consumer is provided with the required documentation after the PV system is installed. By focusing on quality, the solar sector wants to improve the overall quality and long term reliability of PV systems in Pakistan. It wants to prevent – among other things: low quality and unsafe installations claims work; misleading claims given to system owners regarding the performance of their Solar PV system and future electricity bills; false advertising regarding the size and suitability of the Solar PV system being installed and; the installation company not taking responsibility for the whole of the Solar PV system including fulfillment of component warranties and general workmanship.

The documentation provided by the Solar Quality Passport contains, among other things, information on the following aspects of a PV installation:

- Information about the system size, system design
- Place, date and type of installation
- Owner and installer of the PV system
- Built-in components (modules, inverters, cables, mounting system, storage system if applicable)
- Safety and commissioning measures
- Grid connection codes
- Yield expectations
- Annexed documents such as warranty certificates, wiring diagram etc.

The Pakistan Solar Quality Passport is a PDF-based document, being handed over to the customer with the finalization of each PV installation. It is endorsed and recommended by the Alternative Energy Development Board (AEDB).

More information available at www.solarqualitypassport.pk

COMPANIES PROFILE

GERMANY





aleo

Incorporated in 2001, aleo is recognized as one of the most trustworthy manufacturer of solar modules. The company produces all its products in its plant in Prenzlau, Germany. aleo lives by strong values that pushes the company to pursue industrial excellence to always make solar energy more reliable so that citizens can go solar with confidence.

In 2014, aleo joined the Sino-American Silicon Products (SAS) Group as a wholly owned subsidiary. SAS is the third largest manufacturer in the world of silicon wafers. With more than 8500 employees and USD 2 billion in turnover in 2017, the group manufactures the components used in computers, phones, cars, trains, cameras, connected devices, etc. that you use in your everyday life. It is also a recognized technological leader in high-efficiency solar cells and wafers.

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Since 1899 BAE stands synonym for quality and reliability in the market for industrial lead batteries. The core business of BAE is the production of stationary batteries, especially wherever electricity needs to flow uninterrupted like in the emergency power supply for data centers, electrical power supply facilities and telecommunication infrastructure.

Since many years BAE also operates in the market for renewable energy and provides solutions for a reliable and environmental-friendly electrical power supply. Moreover BAE produces batteries for motive power and railway applications. Nowadays we are an independent medium-sized company with a well-established position in the international battery market.

BAE excels in its customer orientation and quality is our hallmark. A highly flexible and process-orientated structure enables us to provide our customers with tailor-made solutions.

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ecoligo.
get solar. get it financed.

ecoligo provides a fully financed solar-as-a-service solution for businesses in emerging markets. With a complete digital platform for financing and delivering solar projects, the company removes barriers that prevent such projects from being realised. Supplying these businesses with affordable electricity enables them to grow and boost the local economy.

In emerging markets, local businesses are faced with rapidly rising costs of energy and unstable power supply. Additionally, the energy is typically provided by diesel generators or the national grid, both of which burn fossil fuels that damage the environment and contribute to climate change. Clean, low-cost energy solutions, such as solar power, are both technically and financially viable. However, they are prevented from being implemented by a lack of available finance; international financing associations focus on large scale projects, while local loans are expensive and unsuitable. Consequently, solar projects with a volume of between €50.000 and €2.5m are not realised, despite their attractiveness.

ecoligo finances these projects through the crowdinvesting platform ecoligo.investments, offering fixed and attractive returns to private investors. Investments start from 100€ and save tonnes of CO2 emissions, enabling impactful citizen participation in the global energy transition. ecoligo works with local partners to build, operate and maintain each solar system. Through pay-per-use solutions and leasing solutions, ecoligo's customers pay an affordable monthly fee, and own the system after the contract ends.

Ecologo

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Fronius a leading global manufacturer of solar power inverters based in Austria, Europe. The Fronius Solar business unit creates state of the art technology to convert and harness energy. We have been researching, developing and manufacturing innovative photovoltaic solutions since 1992. We provide solar PV solutions for residential, commercial and industrial usage backed with a 5 year warranty without compromising on performance.

High quality products and exceptional services are what make Fronius a quality leader in the global market. Being in solar industry for more than 25 years, we also offer a wide range of products related to generating, storing, distributing and consuming energy from renewable sources. This includes inverters, storage solutions, meter and energy monitoring systems and an extensive range of services. What keeps us going is our vision of "24 hours of Sun" a sustainable energy supply based on 100% renewable energy sources.

Fronius is a family owned business which believes in quality and maintaining long term relationships. We strongly believe that a localized support system is the best approach in order to cater the needs of our customers. Our FSP (Fronius Service Partner) Program provides customers insights straight from the manufacturer. FSP's are permitted to replace PC boards in inverters during a service visit while keeping the warranty intact.

Fronius provides accessible support all round the clock through our headquarters in Austria and Regional office in Dubai.

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Electric energy is required everywhere and in ever more applications. In this world, where everything becomes electrical, HOPPECKE is your partner and expert.

From the comprehensive product programme of batteries and cells (in lead-acid and lithium technology) to complete energy systems with the most modern charging technology, monitoring units and engineering to consumption dependent energy billing – our portfolio always contains the suitable product tailored to the individual customer requirements.

With the development of marketable, forward-looking energy storage solutions, HOPPECKE makes an important contribution to solve the societal challenges that result from the implementation of the global climate protection goals.

With its headquarters in Brilon, Hoppecke and 21 subsidiaries worldwide, the HOPPECKE Group has more than 2,000 employees.

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meteocontrol is the leading global provider of independent solar monitoring systems and currently monitors more than 45,000 PV systems with a total power output of over 13 GWp. For more than 40 years, meteocontrol has developed monitoring software and hardware for solar PV systems. We offer planning and commissioning of monitoring systems, as well as yield forecasts, technical due diligence, and energy and weather data analytics. Our independent engineering division has supported projects with a total investment of more than 13 billion euros.

meteocontrol GmbH is a member of SFCE Shunfeng International Clean Energy Limited, with headquarters in Augsburg, Germany, and Shanghai, as well as subsidiaries in Lyon, Madrid, Milan, Santiago de Chile, Tokyo, Chicago, San Salvador and Melbourne.

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**mounting
systems**

Mounting Systems GmbH is one of the biggest producers of racking systems for solar applications. An innovative approach combined with profound know-how provide the conditions which make the company one of the standard setters for solar technologies.

With 25 years of know-how in the market, Mounting Systems ranks among the most experienced developers and manufacturers in this sector.

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RAACH SOLAR engineers, procures, delivers, installs and maintains turn-key and tailor made photovoltaic systems worldwide. RAACH SOLAR is a premium supplier for open area photovoltaic power plants, building integrated photovoltaics (BIPV), carports, battery storage systems, AC mini grids, solar pumping systems, solar streetlights, photovoltaic power supplies for telecommunication projects, solar powered cold storage rooms, concepts for electric cars and consulting services.

Our components come from first class manufacturers, not the lowest price, but the lowest life time cost. We look back on 30 years professional experience and we look forward to new projects and maybe you as our new partner.

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SMA Solar Technology AG is the pioneer and global innovation leader in photovoltaic inverter and system technology with a cumulative installed base of >70 GW and around 3,000 employees worldwide. Besides highly efficient and reliable products, SMA focuses on integrated system solutions as well as O&M offering in order to provide best value for the customer.

SMA Sunbelt Energy GmbH is a 100% affiliated company of SMA Solar Technology AG and concentrates on Off-Grid, PV-Diesel Hybrid and Battery-based solar applications with particular focus on the world's Sunbelt region. Based on the in-house product portfolio, SMA Sunbelt offers tailor-made engineering services as well as modularly expandable turnkey solutions.

One key aspect of our work in developing solar markets is technical training, know-how transfer, and local capacity building. We expand the coverage of our in-house training center, the SMA Solar Academy, by collaborating with technical universities in focus countries. For these "Hosted Solar Academies", we provide a professional training curriculum and support in setting up a dedicated solar training lab for hands-on training to local installers, EPCs and project developers. In Pakistan for example, SMA training equipment is utilized at the Center for Energy Research and Development (CERAD), University of Engineering and Technology in Lahore.

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Steca Elektronik GmbH is an electronics company with sustainable growth. We pool long-standing experience and innovation power as a manufacturer of Steca-branded product lines in solar electronics and as an electronics manufacturing service provider.

One of Steca's latest innovations in PV off-grid is the hybrid inverter family Solarix PLI. As an all-in-one package, the Solarix PLI allows users to supply consumers with 230 V AC power, charges the battery with an integrated MPPT charge controller, and at the same time permits connection to a generator or an available electricity grid.

Everything in a single device – and at an unbeatable price-performance-ratio. Solar energy can be used as the top priority, for example. And if that isn't enough, a generator can be started or the supply can be switched to the public grid. At the same time, the battery can also be recharged by either the generator or the grid. Given its very quick switchover time of up to 10 ms and its flexible energy priority selection, the Solarix PLI also acts as an uninterruptible power supply. Three-phase and parallel connection is possible, thus covering power ranges from 1 to 45 kW.

No matter if mini-grid, small commercial or solar home system – the Solarix PLI is the optimal choice for every PV off-grid application.

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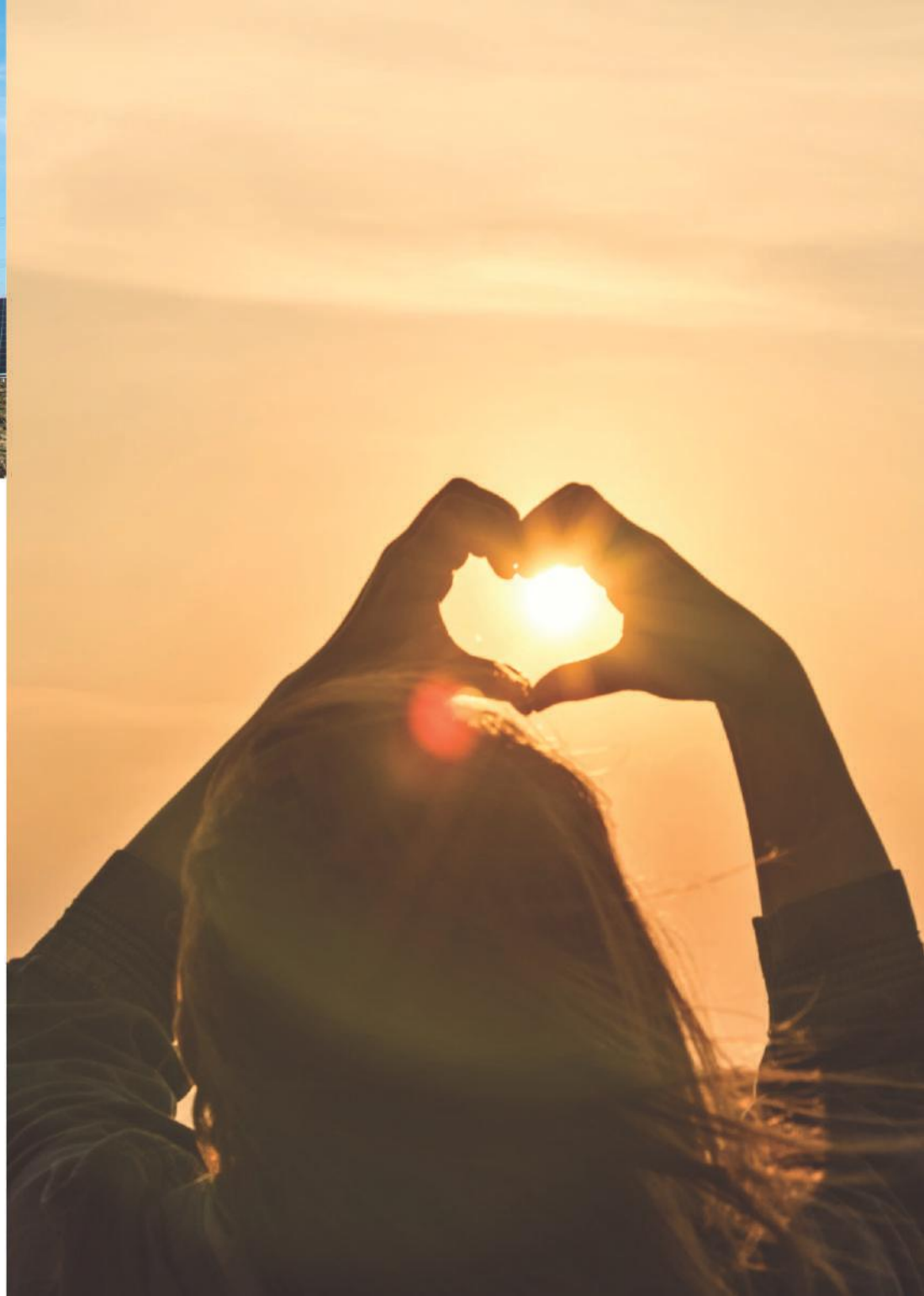
POWER
ONE FOR ONE

Power One for One is a clean power impact investor. The organization consists of a for-profit and a non-profit entity, Power One for One and PowerOneForOne Foundation, respectively.

Power One for One focuses on sustainable energy infrastructure investments in growth markets and mainly non-OECD countries such as Pakistan. In addition to the general business activities for industrial scale solar roof top projects in Pakistan, Power One for One has entered into a development partnership and this development partnership together with AREAM is part of the developPPP.de programme that GIZ implements on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

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COMPANIES PROFILE

PAKISTAN





Adaptive Technologies (Pvt) Ltd. was established in 2005 as a nationwide progressive enterprise to provide superb quality, cost effective, reliable and efficient solutions in the field of alternative energy and energy efficiency. It is an EPC company that specializes in solar power projects, providing one window solution from design, supply, manufacture, installation and commissioning and after sales support.

Adaptive Technologies (Pvt) Ltd. is the preferred partner / distributor of world's renowned solar products (panels and inverters), providing finest solution for our customers. With decade of experience, we have completed hundreds of projects. Cumulative workings are in several Megawatts with numerous major reference sites across Pakistan.

While head office is located in Karachi, site offices are operational in Islamabad and Lahore as well. Adaptive is focused on facilitating customers nationally and having long term business cooperation relationship with its globally renowned quality products and superior services.

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Allied Solar

Allied Solar is a privately owned company formed in 2012 to address the energy gap in Pakistan. It offers renewable energy solutions with a special focus on solar PV solutions and wind. At Allied Solar, the business philosophy is to offer the best products sourced from around the world with top notch after sale service and support.

Whether a solution is designed for a bottom of the pyramid rural family or a large scale industrial customer, our products and services are meant to address the long term energy demand of our customers. Besides products, Allied Solar offers its clients a wide array of financing options as well. In the off grid sector Allied Solar has nationwide partnerships with Microfinance Banks such as Khushhali Bank and for industrial and utility scale projects financing options are available from commercial banks. Allied Solar enjoys complete faith and trust of its partners and customers.

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Four Brothers Energy (Pvt.) Ltd.

Solar Energy



CREATIVE ELECTRONICS (PVT) LTD.
Creative Group of Companies

Creative Group was established in 1993 and is one of the leading manufacturers, solution providers and suppliers of Electrical Power Distribution and Transmission Systems, all type of Energy Meters, Smart Meters and AMI Solutions, all type of Distribution Transformers ranging from 10 KVA to 5 MVA, PCC Poles and Steel Structures/Towers, Line Hardware fittings, accessories, Fuse Cutouts, Fuse Links, Transformer Accessories, Curing Oven, Dehydration Plant, Line T&P and utility products, Vehicle mounted Folding Ladders, Scissor Lifts and large range of quality Fiberglass/FRP products.

In addition we also offer Solar Energy Solutions, Net Metering Electrical Network at domestic, commercial and industrial level. We also manufacture Bi-Directional Energy Meters for Net Metering Connections where Solar Systems are installed. We are approved/ enlisted by Alternative Energy Development Board (AEDB), govt. of Pakistan for installation of solar systems and provision of services for Net Metering.

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Four Brothers Group is a fast growing group of seven companies engaged in the business of Agricultural, Telecom and Energy sector. The Group has franchise shops and sales network throughout Pakistan.

Four Brothers Energy (Pvt) Ltd is a subsidiary of Four Brothers Group, having business in the arenas of Power Generation from renewable and other conventional sources, Transmission and Distribution. The company is actively operational in solar energy and has installed Solar Power System for homes, offices, tube wells and industrial usages at numerous locations. The company is enlisted with AEDB as service provider and also initiating net metering installation with Solar Power at several sites.

Four Brothers Energy (Pvt) Ltd is looking for exploring the new horizons as well in Power Sector like introduction of Advance Metering Infrastructure (AMI) in Distribution Companies in Pakistan with the collaboration of foreign firms.

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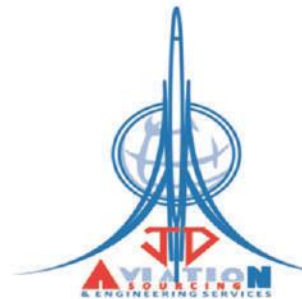


HiSEL Power Pakistan is a renewable energy company providing solar electrification, power backup and energy conservation solution all over Pakistan from the last six years. It is fully owned by Dynavolt, a public listed company in Shenzhen-China, involved in manufacturing of electric vehicles, lithium-ion batteries, power batteries for motorbikes, renewable energy and power business.

HiSEL focuses on captive power distributed generation projects in industrial and commercial sectors. It has profound expertise in executing small to large scale projects at international standards. The company has orchestrated numerous projects in residential, commercial, industrial, telecom and agriculture sectors with reliable and cost-effective solar solutions. HiSEL has extensive presence in remote areas through established distributor network and its wide range off-grid products are easily available in Pakistan.

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JD Aviation Sourcing and Engineering Services believes in building strong professional relationships at all levels of its operation. It believes in team work and combines together all expertise while focusing on specific needs of its valued clients. The team comprising senior electrical engineers brings rich and valuable renewable energies expertise in the PV and Solar Thermal regimes. This in fact is the technological strength of this company.

JD Aviation Sourcing has launched solar systems for domestic as well as commercial usage and in addition to solar pumping systems for agricultural usage. The company provides consulting and engineering services and sources professional solar energy hardware backed by manufacturer's warranties. JD Aviation Sourcing is also an approved vendor for AEDB for net metering.

JD Aviation Sourcing has signed an MOU with KIU (Karakoram International University) in December 2018 for the establishment of renewable energy (solar, geothermal and hydroelectric) research center at KIU. The company has also recently signed an MOU with Swedish Company M/S AZELIO AB in April 2019 for collaboration in the field of Concentrated Solar Power (CSP) with Thermal Energy Storage (TES) that will eliminate battery usage. A demonstration unit is envisaged to be installed in Pakistan by early 2020.

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Live Smarter

JKS was established in Pakistan in 2003 backed by international Partners. It is offering a wide range of products and Services. In the renewable energy realm, JKS is a renowned and reliable solution provider in Pakistan.

JKS has completed more than 2600 solar and backup sites in different sectors from domestic to large industrial energy solutions. JKS offers customized products and services that optimize the customers' return on investment. JKS is an authorized partner and system integrator of the world's recognized solar equipment manufacturing companies like Schneider Electric, LG Electronics, Power Sonic, JA Solar, Hoppecke and many others.

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Nizam Energy provides solar energy solutions to homes and businesses, offering comprehensive, complete solutions no one else can match - including design, construction, operation, management and financing services.

From starting business in 2012, Nizam Energy has come a long way. Today, Nizam Energy is considered the leading solar energy company in Pakistan. It is the only company with experience in managing utility scale projects and insight into working within the confines of regulatory policies and varying geographies, both in urban and rural settings.

Nizam Energy has installed 115 megawatts in grid-tied, hybrid and solar pump systems that includes 320 water pumps and 10,000 off-grid houses electrification. At Nizam Energy, the team is working on developing, financing, constructing and operating medium and large-scale solar energy assets, providing cheaper, more efficient and reliable clean energy alternatives.

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READ Solar (Pvt) Ltd. is a company established to provide alternative energy solutions and services to Pakistan. The company is geared towards bringing the best quality solar solutions to Pakistan. READ Solar provides economical, high-quality products and services to its clients that not only improve the environmental quality of the country but also help in resolving the prevalent energy crisis.

Worldwide technological developments have enabled READ Energy's team of dedicated engineers to acquire unique expertise in how best to harness, control and convert solar energy into reliable electricity efficiently, ready for use in various sectors such as Industrial, Agricultural, Corporate, Commercial and Residential etc, as well as transfer it to the local grid. READ solar has taken step-forward for the development of solar projects of various on-grid and off-grid with emphasis on a substantial increase of renewable energy in Pakistan's grid.

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Reon Energy Limited is Pakistan's leading industrial solar solutions specialist with deep domain expertise in lifetime solar resource assessment, engineering, development and construction, operational asset management, trouble shooting and performance management.

We continuously seek improvement in strategies, processes, and design through learning partnerships, site audits and digital plant offerings, with special emphasis on Health, Safety and Environment (HSE). Reon brings unparalleled track record working with local and international groups such as Unilever, Abbott Laboratories, Kohinoor Textile Mills, Fauji Cement Company, Sindh Engro Coal Mining, Shell and Service.

Our Team is essential to delivering the Reon vision of generating power that creates prosperity for businesses, empowers people, and protects the planet.

Reon is a part of the Dawood Hercules Group.

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Shams Power is Pakistan's leading distributed solar generation company with over 57MW capacity contracted under private Power Purchase Agreement's (PPA). The business model is to invest in solar rooftop/ground mounted power plants at Commercial and Industrial sites, and run them for 15-25 years - selling electricity to the site at a discount to the grid. This model removes any CAPEX responsibility, Operations and Maintenance expense, and equipment risk for the customer.

Moreover, the equipment is transferred to the client at the end of the PPA, giving them free electricity for the remaining life of the equipment. Notable clients already benefiting from these services include: K-Electric, Nishat Emporium Mall, Metro Cash and Carry, Akzo Nobel, Packages, Seasons Canola, Menu Chicken, Shalimar Hospital, LUMS and several others.

Shams Power
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SHAMA

Solar Energy for Cleaner Living

SHAMA Solar is the renewable division of the partnership firm HIMA^Verte. Over the past four years, the company has successfully installed over 300 solar installations, including both solar PV and thermal. The company also undertakes energy efficiency and renewable energy monitoring and consultancy work, and represents the UK company Efergy in Pakistan.

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Sharif International has been a pioneer and a leading force in Renewable Energy and Energy Efficiency arena to the Defence and Government sectors as well as to Energy sector. It is one of a select few companies to have been awarded the ESCO status by ENERCON (Ministry of Water & Power) for rendering energy services based on its professional setup and past and current achievements.

To date Sharif International has helped hundreds of public & private sector organizations, industries in different industrial sectors and general businesses achieve many MWs (Mega Watts) of energy conservations. Most of the time these savings are by way of electrical energy saving, whereas at other instances the savings are through either natural gas or provision of alternate energy systems compatible with any given setup.

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Solar House works with both residential and commercial customers, on all types of property ensuring highest standards of service for everyone. Solar House provides ultimate solutions for the energy crisis in Pakistan. Solar energy is a renewable resource that is environmentally friendly. Unlike fossil fuels, solar energy is available just about everywhere on especially southern Punjab, Pakistan.

Solar House uses the most innovative technology available with services from trusted engineers. This commitment to perfection allows customers to get the most out of their energy systems.

Solar House
Shop # 3, Fort View Market, Ghanta Ghar
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Sky Green Engineering is a private limited company based in the Khyber - Pakhtunkhwa Province in Northern Pakistan. It is an ISO 9001:2008 certified organization, member KPCCI and Renewable Energy Association of Pakistan.

Sky Green Energy provides solutions in energy, water, industrial, environment and agricultural sectors across Pakistan to a vast customer base including corporate and private sector as well as development sector and government organizations. Services provided by Sky Green Engineering include:

- Engineering, Design
- Turnkey Project Management and Execution
- Site survey and Assessment
- Installation and Commissioning
- After Sales Support

Sky Green Engineering (Pvt) Ltd
1196, Quaid Plaza, Aziz Bhatti Road
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SolarSigma Ltd.

Solar Sigma Ltd. delivers cost effective, reliable and innovative solar energy projects and products. Best project management is a specialty of Solar Sigma Ltd. where special attention is focused on customer requirements, efficient design, safety, quality, cost and schedule.

Solar Sigma Ltd. is part of SSG International Malaysia. The Company Head Office is in Kuala Lumpur, Malaysia with regional headquarters in Islamabad, Pakistan and branch offices in Lahore, Rawalpindi, Sargodha and Swat.

Solar Sigma products are the best selection of PV solar modules, inverters, batteries and other energy efficient appliances.

Solar Sigma services include:

- Net-Metering (One-Window-Solution)
- Financing for Solar Projects
- Solar Projects Management
- Solar Systems for Industrial, Commercial, Residential, Agricultural sectors
- Solar Home Systems (SHS)
- Power Plants Engineering, Procurement and Construction (EPC)
- Consultancy Services

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SPS Private Limited specialize in Solar Power Solutions, civil, electrical, site acquisition and maintenance works.

Satisfied Clients includes Wateen Telecom, Mobilink, Nokia, Siemens Network, Defence Housing Authority, Alcatel Lucent (Pvt) Limited, IBM Global Pakistan (Pvt) Limited, Innovative (Pvt) Limited, Century Paper Mills, Qurban School, JCTV and UCC Pvt. Ltd.

As system integrator in solar PV projects, SPS offers well renowned Brands like Yingli Solar Panels, Voltronic Inverter and China Shoto Batteries to clients.

SPS is an ISO certified multi-discipline engineering and construction Services Company, committed to establish and maintain a quality. The team is always determined to provide the most reliable solutions to clients and that is the reason for significant repeat business from satisfied clients.

SPS is pre-qualified and registered with Pakistan Atomic Energy Commission, Director General Housing Rawalpindi, Public Health Engineering, Pakistan Public Works Department (PWD), Communication and Works Department Punjab (C&W).

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Tesla is one of leading manufacturer of PV Panels and Inverters in Pakistan. Production facility offering standard and customized Mono and Poly PV panels in large variety was established in 2015 with a capacity of around 35 MW per year. Over 60 MW locally produced panels have been powering a range of applications including domestic, industrial, irrigation and remote off-grid spread all over Pakistan in private and government programs. Tesla has also exported PV modules regionally and globally.

Tesla has recently taken the lead by starting the manufacturing of hybrid inverters and energy storage systems in Pakistan. Partnering with leading component suppliers, Tesla develops products that are tailored to withstand challenging local grid, weather and user conditions. R&D is Tesla's strength that results in innovative and continuously improved Tesla products.

Tesla provides unparalleled design, integration, installation and after sales services for a complete range of solar solutions in Pakistan.

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U Energy has been installing solar photovoltaic since early 2010 whilst competing for excellence in installation, from simple domestic to industrial viable applications. U Energy has experienced in-house system designers and expert on-site installers, marking U Energy as one of the leading installers of Solar PV.

U Energy team is qualified and well experienced ensuring you that customer's solar investments are in good hands, with promised safe and sound installation, giving satisfaction and peace of mind. The suitability of the installation, its reliability and guarantee of the finished system is what makes U Energy unique amongst the industry.

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