SmartWatt

SmartWatt Solar OSMOSIS

SmartWatt is an Abu Dhabi based Energy Services and Consulting Company, offering holistic and integrated energy solutions to Electricity Regulators/Grid Operators and End Users alike.

Alternative sources of energy to drive your organization forward...

Who We Are

SmartWatt is an Abu Dhabi based Energy Services and Consulting Company, offering holistic and integrated energy solutions to Electricity Regulators/Grid Operators and End Users alike. Our strength lies within our team's exceptional expertise, our strategic partnerships, and our in-depth knowledge of the renewable energy sector and its unique advantage over other forms of energy and its economic benefits.

These elements, along with our in-depth knowledge of demand response, demand side management, and electricity markets, allow us to play an integral role not only in optimizing the Grid Operator's "cost to reliability ratio", but in revolutionizing the entire electricity market clearing process as well.

Our expert understanding of the power grid stability and security requirements, and its complex economic, regulatory and technical dynamics, enables us to reduce our clients' electricity expenses and to open their doors to new revenue streams through our highly innovative and truly integrated solutions.

We are a renowned company, with a well-established structure for the provision of alternative source of energy to drive your organization forward.

Our basis of operation includes Consultancy and EPC (Engineering procurement and contracting). We deliver affordable and efficient solar energy solutions to power organizations and industries. We partner with you to build your dream.

Mission

Our mission includes:

- To develop a renewable energy project that will not only be a major supplier of electricity to organizations and the general populace but also enhance the vision of UAE in terms of energy security.
- To offer assistance in form of energy alternative to organizations and companies by eliminating power outage or failure using the solar energy as a source.
- Support safe working standards that will ascertain the safety of personnel, installations and electrical output.

Vision

SmartWatt vision is to combine in-depth understanding of solar technology with nature's most available and abundant resource (sunlight) to generate the cleanest, affordable and energy efficient solutions for the brightest future. In this regard, we are well cited to become one of the leading renewable energy providers in the Middle East.

What We Do

OSMOSIS

OSMOSIS stands for **Off-grid Solar Management, On-Grid Solar Integration Solution**

Off-grid Solar Management

An off-grid solar system is the alternative to on-grid solar system. They are effective when the grid system is down. To guarantee access to steady electricity supply, off-grid solar system requires a backup generator and a battery storage. Off-grid solar systems has the following advantages:

- They have been noted to be cheaper than extending transmission lines in some remote areas.
- It encourages the user to be energy self-sufficient. This is known by some organizations as a form of security.

Equipment for off-grid solar systems are the following components:

- **Off-grid Inverter:** An inverter is needed to convert DC to AC. Electrical current flows from the solar panel through the solar charge controller and the battery bank before it is finally converted into AC by the Off-grid inverter which will be used by all connected electrical appliances.
- **Battery Bank:** Without the battery storage, it will be impossible for the solar system to supply electricity after sunset. A battery bank is usually a group of batteries connected together by wires. They are charged by the constant supply of solar energy during the day and used after sunset when solar energy is least available.
- **Solar Charge Controller:** They are known as battery regulators or charge regulators. They limit the rate of current that is being delivered to the battery bank, thus protecting the batteries from excessive charging.
- **DC Disconnect (additional):** This is installed between the battery bank and the off-grid inverter. It is used to switch off the exchange of current between these two components. This is required for troubleshooting, maintenance and protections against electrical surge (fires).
- **Backup Generator (optional):** Backup generator comes to play when there are several days without the sun shining. It is advisable to install a backup generator that runs on fuel than investing in a giant battery bank that is seldom used at its full potential.

On-grid Solar Integration Solution

On-grid solar systems are solar PV (photovoltaic) systems that generates power only when the utility power grid is available. They must link or connect to a grid to function. Excess power generated are sent back to the grid when you are producing excessively which will be credited for future use.

Solar PV systems have advanced from small stand-alone installations through residential and commercial systems to MW-scale giant installation hat supplies significant energy into the utility grid. On-grid Solar Systems are cost effective and easy to install.

Our Services

Our services are derived from what we have carefully researched, developed and harnessed. We set out to provide our clients with the most effective, efficient and proficient PV Solar hybrid system. Adopting a systematic “waterfall method”, our approach encompasses three phases, which include five sprints or sub categorical phases. Each component of our approach is designed to produce a goal and thus reach a milestone. Our three phases are: Design Due Diligence, System Launch and finally the third phase, Going Live/Training/Sustaining.

With this model, we consult for companies or organizations in general that would like to incorporate solar as part of their energy source.

To reduce the burden on our clients, we offer a financing system, wherein the client would avoid capital costs, and simply rent power per kilowatt hour used. Also, we are involved in engineering procurement and contracting for those needing to install solar and also our solar management plan.

Production Guarantees

When you make up your mind to incorporate Solar Systems as a major component of your power system, there are certain uncertainties, especially when the system is expected to last for several years. For solar PV system, warranties and guarantees are provided, but the most important are the performance guarantee and the yield guarantee.

Performance Guarantee

Performance guarantees are offered by solar manufacturers. Performance guarantees means that if the solar panel or any component of the solar installation degrades at a pace faster than what the manufacturer proposes, the manufacturer will replace the panel or component that is affected by such degradation. Solar PV Systems are intended to last for several years (decades). The system does not require any fuel, thus, it is a passive system that is intended to run on its own using the sun’s radiation. They are built with materials that are resistant to atmospheric elements (snow, wind, temperature, rain and sun). Performance guarantee covers the integrity of the solar panel and protects the user against issues such as manufacturing defects, environmental issues, and premature wear and tear. The performance guarantee typically proposes that the solar panel will work for a minimum of 10 years without failing.

As time goes on, there is a percentage of performance loss (quiet small but not negligible) over time. When this loss is aggregated together over a considerable period of time (20 to 30 years), it matters. Performance guarantees proposed or given by the manufacturers are between 10-25 years. Solar panel warranties protect your solar investment (as they are huge) and thus, they are considered as an essential part of any solar installation.

Before choosing a solar PV system, there is need for the client to

consider the warranties and guarantees offered by the manufacturer of such solar panel with the help of an expert. SmartWatt reviews the details of the solar panel with the client and give a professional recommendation to the client regarding the project. We also explain the details of the warranties to the client to clarify any future issue that may come up.

Yield Guarantees

Yield is the amount of generated energy by the Solar PV Plant, and measured in kWh through the Monitoring System. Since the total irradiation in one year in Abu Dhabi can vary by up to ±12% from the yearly irradiation average taken over 20 years, the guaranteed yield quantities that we will guarantee on a yearly basis will be subject to a ±12% tolerance. This is because the annual energy yield is proportional to the total irradiation in that same year, and it is expected that the total irradiation can be below the 20-year average in several years. Please keep in mind that this deviation will also be positive in several years.

Our partnership's proposed Yield Guarantee is subject to the following terms and conditions:

- The guaranteed production yield will be measured and verified at the Inverters of the Solar PV Plant. Based on this, AC Cable Losses will be excluded from our yield guarantee.
- Power loss due to shading from any new object that is not considered in the shade analysis carried out at the design stages is excluded from any liability on our partnership.
- Power loss during any duration where the internet connection provided to us is not available on-site, as the monitoring portal cannot be accessed during that period.
- Power loss due to lack of or not cleaning the Modules properly.
- Beyond the first year of operation of the system, the yield guarantee in any given year is valid only if a maintenance contract with our partnership is approved for that year.
- Power loss due to vandalism acts, extreme weather conditions, natural disasters and force majeure situations will be excluded from SmartWatt's liability.

Consulting

Our solar consulting section is committed to the development of equipment and resource management products that are applicable in different services. We provide system engineering and design services in our consultancy department.

Sustainable solar energy projects costs several millions. To avoid failure, before engaging in this money-consuming project, a careful study of the economic benefits, risk assessments, physical parameters and other necessary factors must be considered. The complete design and financial plans of solar projects will be dependent on reliable solar data (and the interpretation of such data) and projections. Several companies have been involved in gathering solar data, but system designers are saddled with the responsibility of choosing the most reliable data, from a renowned source.

Solar Power & Solar Data

Based on the resources we have (in terms of professionals and modern technological equipment), we can offer reliable solar data which can be counted on for the proposed solar project, no matter the size and purpose. We carry out in-depth study of various parameters related to the subject at the site under scrutiny for a period not less than six months.

This study includes amongst others meteorological studies (the daily movement of the sun and the short-term changes in weather conditions). This will give us the opportunity of generating the solar radiation model that can be used to project into the future.

Even if the system designers have already gotten a reliable data, we can still provide our rare expertise by giving them professional counsel on the data gotten which will encourage financial institutions and the engineering companies to invest their resource in the project.

Workshops & Training

Our consultancy department also arranges technical sections, workshops and training for relevant professionals on specific subjects related to solar energy development and application. With our sophisticated equipment, SmartWatt provides the consultancy services at affordable prices.

Our Values

- **Tailored and optimized solution:** Our energy solutions are always designed and tailored towards the specific needs of the clients. The solution will be built with the best available technologies. The solution will also include hardware/software integration of different technologies to provide the client with turnkey solution including all contracting element.
- **Integrity:** This is observable in our proven track record of delivering complex and relevant project. In addition, all our partnering companies have a proven track record of their own, in the region where they operates. We have successfully delivered projects that included several technical and logical challenges with strict deadlines. We have also delivered projects of varying scopes in solar systems, power and general contracting.
- **After-Service and project maintenance:** We stand by our solution through our effective performance guarantees. In addition, we provide continued maintenance service with our clients to ensure that the solution is up to date and delivering efficiently.
- **Value Added Offerings:** We provide training to employees that are saddled with the task of managing the solar systems which we installed for optimum power delivery.

Our Partners

We have strong international partnerships with well-known global energy companies all over the world. All our partners are top notch and renowned in their respective regions.

It is our belief that our partnership consisting of multi-disciplinary reputable companies, combined with our structure and perspective will provide several benefits for clients including complete system design, highest standard guarantees and several added value benefits. With our partners, we are committed to undertake any project successfully and we make ourselves available for any further clarifications, instructions or information that you may require.

Our clients are organizations, establishments, and agencies and corporate bodies (privately owned or owned by government) who have important reasons to seek alternative source of power with which they can exercise their own control, management and maintenance. We provide integrated solar solutions for their needs. Our partnership is offering clients a turnkey solution consisting of several variables that make our product inimitable. Our partnership has yielded various positive results. These includes:

- **A comprehensive approach** that clearly allots milestones and achievable targets to ensure a holistic and fully integrated solution.
- **A strategy that utilizes each partner's comparative advantage** (strength), wherein each partner brings in a wealth of experience and proficiency. Each partner utilize their comparative advantage and understand what their role will be in a project and what it entails.
- **A wide range of suppliers that are market leaders in their respective fields**, as thus, each project we handle will be equipped with top notch Solar Hybrid System that comprises of the highest quality materials, equipment and apparatus.

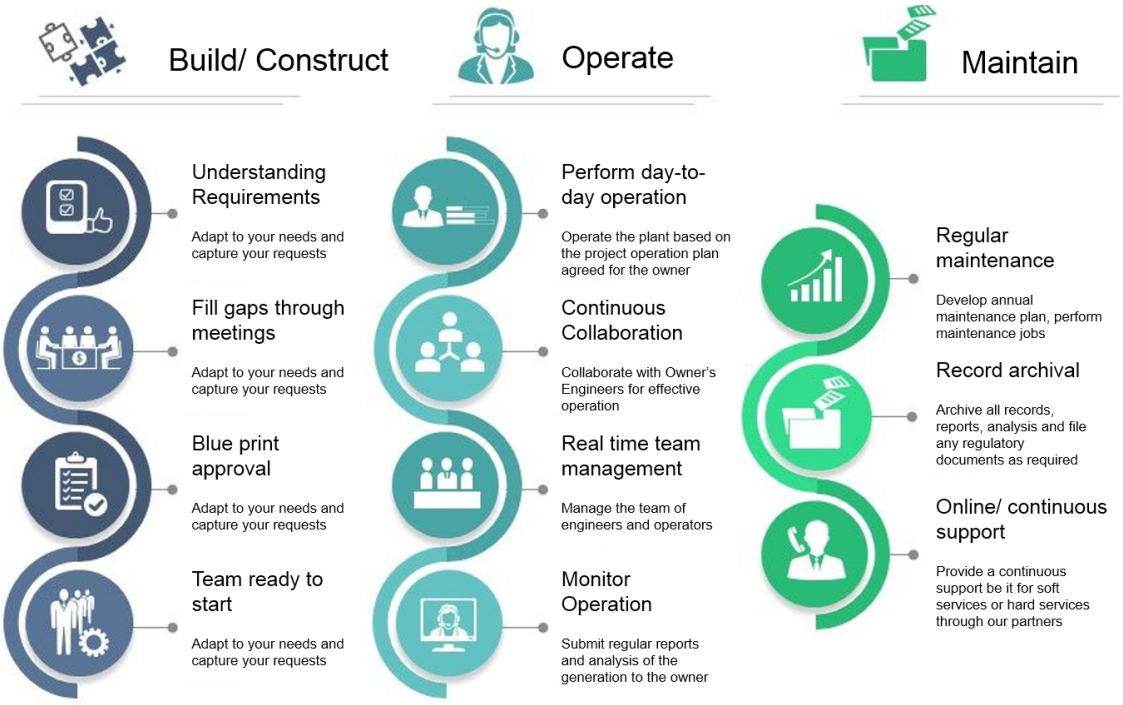
Our Team

For each project, our team will consist of an experienced interdisciplinary engineering team, which covers all disciplines needed for the specific project. The qualifications of these team members have been ascertained to be satisfactory for all projects we handle. We utilize each team member. If required during the execution of the project, our company structures allow employing further experts to provide specific know-how (e.g. High Voltage engineers, Civil engineers, etc.).

The organization of the project team will be optimized according to a variety of aspects:

- Best possible fulfilment of the project scope of work.
- Maximum productivity of personnel.
- Clear and easy project structure to avoid “administrative losses”.
- Highly qualified staff available “on call”, thus reducing overall costs.
- Provision of adequate quality assurance.
- Flexibility in adjusting to unforeseen circumstances.
- Maintenance of a constant communication line with the client.

Once the soft services are successfully delivered,the team will work with technology partners to construct, operate, maintain the plant



Why Choose Us

- **Alignment with client's need:** The client will receive a comprehensive EPC solution that is designed and implemented in collaboration with our partners to meet the specific needs of our clients.
- **Reduced energy bills:** The System will reduce the monthly fuel consumption of our clients which will be replaced with free solar power. This will eventually lead to a drastic reduction in operational cost (or running cost) tied to fuel procurement and transportation.
- **Proper monitoring:** The integrated solution will be monitored by us, to maintain optimum efficiency and ensure that the performance warranty is sustained throughout the estimated life cycle of the system. In addition to this, we offer training services to individuals that will be in charge of the System.
- **Reduction in carbon emission:** Carbon emission is directly linked to the burning of fossil fuel. When organizations are using our integrated energy solution, carbon emission will be noticeably reduced.
- **Improvement in corporate image:** Based on sustainability, this System can improve the corporate image of the organization. We can also support such organization through our marketing capabilities.
- **Alignment with UAE vision:** UAE vision is geared towards energy security. Therefore, active steps taken in reduction of fuel consumption directly supports UAE vision.

Stage I	Stage II	Stage III	Stage IV
Optimum Design	**Project Implementation**	**Commercial and financing**	**Operations and Maintenance**
A key project development challenge is to design a PV power plant that is optimally balanced in terms of cost and performance for a specific site.	Achieving project completion on time and within budget with a power plant that operates efficiently and reliably, and generates the expected energy and revenue, is another key.	PV regulatory frameworks and specific types of incentives/support mechanisms for the development of PV projects, have an important impact on the financial viability of the project, as they affect the revenue stream.	Maintaining the right level of power generation efficiency is dependent on suitable operational strategy and maintenance program.

How can SmartWatt help in each of these Phases...

▪ A team of specialized design engineers with a myriad of solar project experience ▪ International partnerships that can facilitate specialized design requirements	▪ A plethora of projects completed on time and within budget ▪ Project Managers experienced with large scale, medium scale as well as small scale project planning and implementation	▪ Key partners in several fields who will accommodate client financing needs ▪ Team proficient in arranging additional revenue from CDM/ RE Credit trading	▪ As SmartWatt, we can provide different modes of project execution – starting from EPC to BOOT ▪ We can provide a detailed maintenance plan for the clients

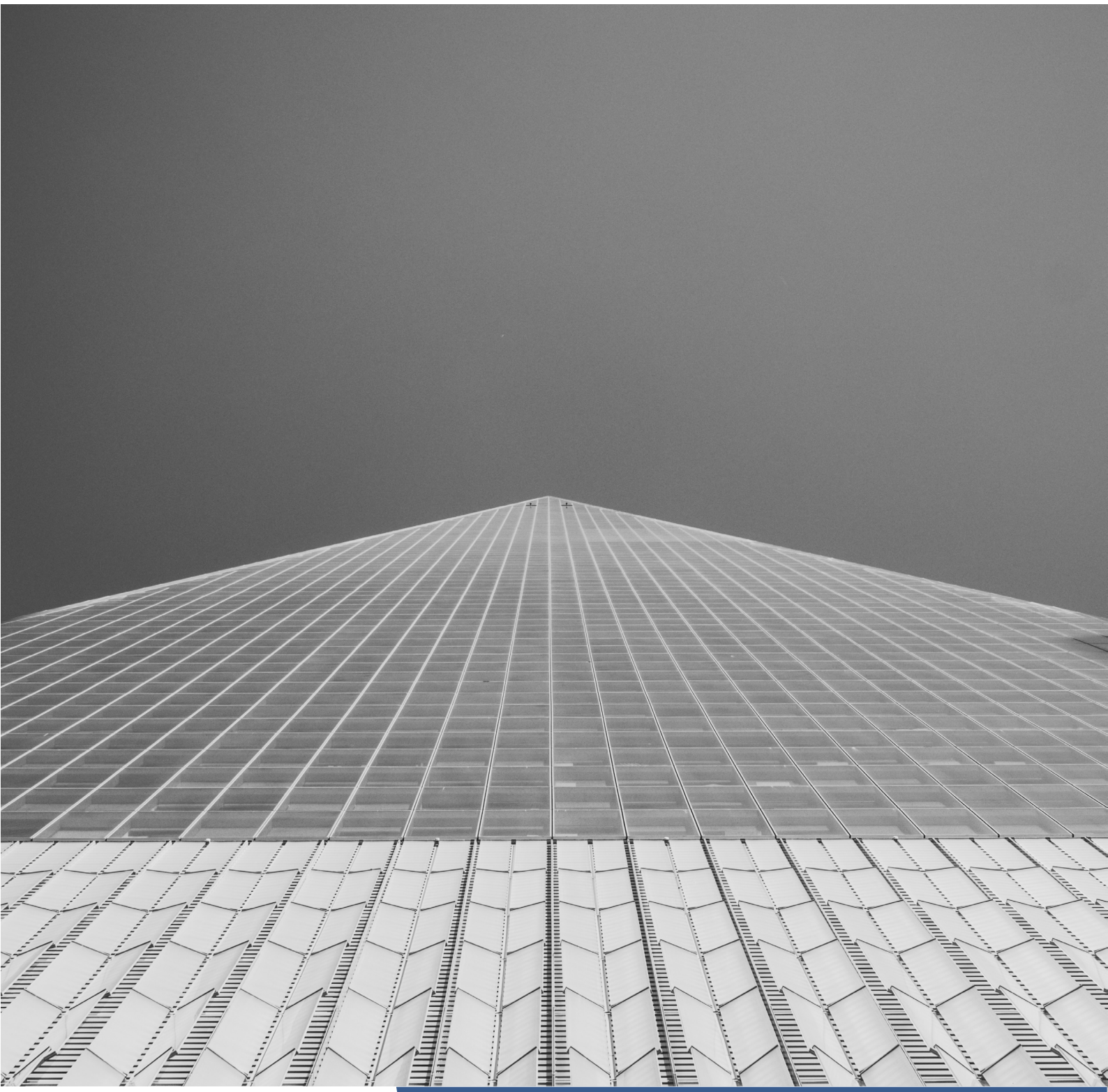
Solar Financing

What is a Solar Lease?

- A performance-based long-term contract which does not expose you to any technical or performance risk on your solar plant.
- SmartWatt manages all stages of the solar plant and you pay a monthly solar bill once the solar plant starts producing electricity.
- This is a Build-Own-Transfer structure so the solar plant belongs to you at the end of the lease.

Why a Solar Lease?

- Provide no upfront investment and only pay when the plant starts producing electricity;
- Focus on your core business and entrust the solar plant to SmartWatt;
- Manage electricity costs in the long-term with a known solar lease payment, which is lower than the local utility's tariff.



SmartWatt

Find us on

http://www.smartwatt.ae/