TECHNOLOGY THAT OUTPERFORMS TYPICAL SOLAR-POWERED NAVAIDS

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S4GA SOLAR AGL OUTPERFORMS TYPICAL SOLAR NAVAIDS

- Independently installed solar panel generates 4x more electrical energy comparing to traditional solar-powered products thus charging battery faster
- S4GA runway edge light provides 1.200 cd of light output – that is twice as much light than the closest competitive product can provide
- We use non-licensed 868 Mhz for wireless communication. Some of our competitors use certified frequency of 900 Mhz which requires special approval (as it is usually used by GSM service providers)
- Unlike other solar-powered airfield lighting – S4GA solar AGL can by energized by both power sources: Solar and Conventional

S4GA CUSTOMERS SELECT SOLAR AGL BECAUSE

- It is 3-5x less investment than conventional (hard-wired) lighting
- S4GA offers 36 months warranty for its solar airfield lights
- S4GA offers attractive project financing for its customers
- It can be deployed 4x faster than wired lighting
- It has the most powerful optics in its class
- It is compliant with ICAO Annex 14

SOLAR AGL – IS NO. 1 CHOICE FOR NON-PRECISION IFR RUNWAYS

- Unlike typical solar-powered lighting – S4GA solar AGL is installed by the airports as a permanent (fixed) – not temporary – airfield ground lighting
- Solar AGL requires NO CCR, NO Transformers, NO Cables.
- Lower investment and simple maintenance due to lack of complex electrical circuit
- S4GA Runway Lighting can operate 100% independently of electricity supply – which translates into close to zero operating cost
- Monitoring of key parameters of each and every single lighting unit on the airfield

4X MORE ELECTRICAL ENERGY

To achieve the highest possible energy efficiency – solar panels in S4GA units are installed independently from the lighting unit. This unique feature allows for maximizing solar energy collection. Why? An entire solar panel is facing one side and can be tilted in accordance with geographical latitude.

How can S4GA Solar AGL generate 4x more electrical energy than other solar products?

Some manufacturers of the traditional solar-powered lighting mount solar arrays into walls of the light casing. Although this solution works fine for temporary applications – in case of fixed (permanent) systems this kind of design has two significant disadvantages:

There are usually 4 small solar panels located on the walls of the lighting unit which means that only one panel is facing preferred direction (e.g. South in Northern Hemisphere). Thus the other 3 panels are providing only minimum power. All 4 solar panels are installed 90 degrees to horizontal plane which also significantly limits their efficiency as compared to optimal tilt (20-30 degrees).

There are two major rules of maximizing solar energy generation

Rule No. 1: solar should be facing sun to generate maximum solar power during day

In case of manufacturers of traditional solar AGL – total solar panel nominal power is usually 20W. However as it is made of 4 solar panels (4 walls) – Only one side can face the sun. This means that only 25% of solar array is working full time. Other 3 sides are working only partially. Thus instead of 20W – unit only utilizes 8-10W.

Rule No. 2: For the best performance Solar panel tilt (angle between solar and horizontal plane) cannot be 90 degree (as you can see in some products available on the market). Typical tilt that is used in Europe is 35-40 degree. In locations that are close to equator optimal tilt should be even smaller 5-7 degrees.

	39 kWh per Year	67 kWh per Year
DC System Size	0.05 kW	0.05 kW
Module Type	Standard	Standard
Array Type	Fixed (open rack)	Fixed (open rack)
Array Tilt	90°	25.9°
Array Azimuth	180°	180°
System Losses	14%	14%
Inverter Efficiency	96%	96%
DC to AC Size Ratio	1.1	1.1

Certain manufacturers mount solar panels into the walls. Thus solar arrays installed 90 degrees to horizon plate are providing **40% less energy** comparing to optimal tilt. For example: solar panel of 50W power output with 90-degree tilt would produce 40% less energy comparing to optimal tilt To sum-up – in fixed (permanent) runway lighting systems independently installed solar panel should be used in order to maximize solar energy collection.

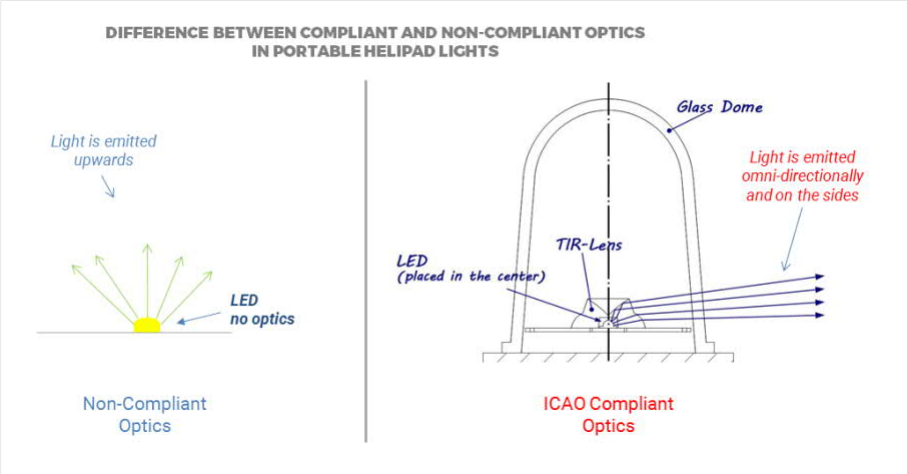
WIRELESS COMMUNICATION

For the wireless communication S4GA uses encoded 868 Mhz frequency with as little as 16mW power output. 868 MHz is the kind of frequency that requires no special approval in most of the countries. There are some manufacturers that are using 900 Mhz frequency which is usually used by GSM providers. This frequency often requires special approval to be used by the airport.

HIGHLY EFFICIENT OPTICS AND WHY IT IS IMPORTANT

S4GA optics is ICAO compliant (we use special TIR design). It means that light emission is precisely directed within angles required by aviation regulations.

Some other manufacturers simply have LED installed on the electronic board and apply NO special optics which means that their lights are non-compliant with ICAO and also light is directed upwards instead of sideward. In practice, it means lower visibility range as instead of focusing light around itself the lighting fixture is emitting light into the skies.



REAL-TIME CONTROL AND ADVANCED MONITORING

S4GA Solar Airfield Ground Lighting offers revolutionary Airport Lighting Control and Monitoring System (ALCMS) that enables control over entire system and individual light unit monitoring (battery level, charging status and operating condition).

Solar AGL users can remotely control entire system or groups of lights. S4GA ALCMS offers individual light monitoring. Monitoring includes such parameters of light as: battery level, charging speed, temperature, operating status, etc.

ADDITIONAL UNIQUE FEATURES OF S4GA LIGHTING

Convertible optical head

We do not limit our customers. Every S4GA unit can be converted for another application. Today you can use your lighting unit as runway edge light but tomorrow as taxiway, helipad or obstruction marking. Optical conversion requires obtaining additional optical head.

An exchangeable battery that can be locally sourced

S4GA lighting unit has an exchangeable battery. Every customer can replace battery by himself. Battery exchange takes only 20 minutes. What is more important batteries that are used in S4GA systems are high-quality batteries that are available all over the World. Our customers can easily source battery whenever they are.

Ultra-sound to scare off wild animals

S4GA units can be optionally equipped with ultra-sound emitting device. This unique feature scares off wild animals thus saving expensive equipment from being potentially damaged (especially applicable to remote airfields located close to active wild life)

Modular Design allows adopting the product to specific requirements

S4GA lights are modular. We do not force customer to buy all-in-one. They can buy lighting unit separately from solar and mounting. This means that they can gradually upgrade their system: first buy lighting units (plain), then add solar and mounting and finalize by obtaining control & monitoring system.