S4GA

WORLD'S SAFEST RUNWAY LIGHTING

CASE STUDIES
SOLAR AIRFIELD LIGHTING

WE OPERATE ALL OVER THE WORLD

150 INSTALLATIONS IN 50 COUNTRIES

WORLD'S SAFEST RUNWAY LIGHTING

OPERATES 365 DAYS ON SOLAR

5-LEVEL PROTECTION AGAINST SYSTEM FAILURE

TABLE OF CONTENT

SOLAR AIRFIELD LIGHTING

CASE STUDY
CANADA ELLIOT LAKE AIRPORT

PROJECT KEY FACTS

Airport: Elliot Lake Airport

Location: Canada

Application: Regional Airport

Runway: 1 371 m x 30 m

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights, Solar Taxiway Lights, Solar Engine, UR-101 Handheld Controller, UR-201 Control & Monitoring Unit, ALCMS Basic Control & Monitoring System, UR-3 PAPI
Controller, UR-1 WDI Controller

Buyer: Elliot Lake City Council

Year of Installation: 2021

OVERVIEW

Elliot Lake Airport is a municipal aerodrome offering passengers, cargo, and air ambulance services.

In 2020 City Council issued a tender for a new airfield lighting system. After careful consideration, S4GA solar lighting proved to be the best fit for the Canadian Airport.

Approach Navigation Systems (S4GA exclusive distributor in Canada) has won the tender and successfully installed the Solar Lighting and ALCMS.

CHALLENGE

Elliot Lake Airport struggled with almost 40 year's old wired RWY lighting consisting of 113 conventional lights connected by 3,000 meters of underground wires. The system has been showing its insufficiency with lights no longer working due to the underground cable splicing.

At that critical point, the Airport started looking for innovative, reliable, yet cost-efficient solutions, that would replace the faulty wired system. In 2020 City Council issued a tender for a new airfield lighting system. In choosing the tender's winner, the government considered many factors that concluded in indicating S4GA as the lonely company that can provide a permanent solar solution capable to operate 365 days in Canada.

SOLUTION

S4GA offered a solar airfield lighting system that proved to meet all the Airport's criteria:

- Fast and easy to install
- Simple to maintain
- Operating 365 days on solar energy
- Real-time Individual Light Status Monitoring
- Remote activation and control
- Suitable for the harsh Canadian environment (limited solar potential, negative temperatures)

Moreover, saving expenses on underground cables, transformers, and ground digging works covered the cost of LED solar lights batteries that would come with a full 5-year warranty.

CASE STUDY
CANADA ELLIOT LAKE AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

SOLAR ENGINE

UR-201 CONTROL & MONITORING UNIT

UR-101 HANDHELD CONTROLLER

ALCMS CONTROL & MONITORING SYSTEM BASIC

APPLICATION PHOTOS

CASE STUDY
ETHIOPIA
JIJIGA AIRPORT

PROJECT KEY FACTS

Airport: Jijiga Airport

Location: Ethiopia, Somali Region

Application: International Airport

Runway: 2 400 m x 45 m

Solution: Complete Solar LED Airfield Lighting System

Products: Solar Runway Lights, Solar Threshold Lights, Solar Runway End Lights, Solar Taxiway Lights, Solar Approach Lights, UR-201 Control & Monitoring Unit, ALCMS Advanced Control & Monitoring System

Buyer: Ethiopian Airlines

Year of Installation: 2018

OVERVIEW

Jijiga Airport (Wilwal International Airport) is serving Jijiga - capital city of Somali Region in Ethiopia. By the 1990s, the airport was used by Ethiopian Air Force and until now the runway has not been illuminated with any airfield lights.

In recent years, the Ethiopian Government has been heavily investing in airports reconstruction including rehabilitation of a runway at Jijiga Airport.

CHALLENGE

For most African airports – and Jijiga is not an exception - it's always been a challenge to install systems that require stable power supply - would it be terminal, tower or airfield:

- Electrical power supply is unstable due to unreliable electrical grid
- Installation of a traditional hard-wired electrical system (including AGL) is economically inefficient due to limited budget
- The cost of electricity in Africa is one of the highest in the World.

As a result, A Tender for The Supply, Installation, and Commissioning of **Solar Airfield Lighting System** at Jijiga Wilwal Garad Airport has been issued.

SOLUTION

S4GA together with its partner Alpha Airport provided complete Solar LED airfield lighting system which:

- **operates 365 days on solar** energy
- has **5-level protection** against system failure
- designed for **non-precision airports** located in countries with high
- photovoltaic potential and unreliable electrical supply

CASE STUDY
ETHIOPIA
JIJIGA AIRPORT

S4GA PRODUCTS

SP-401S SOLAR APPROACH LIGHT

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR THRESHOLD LIGHT

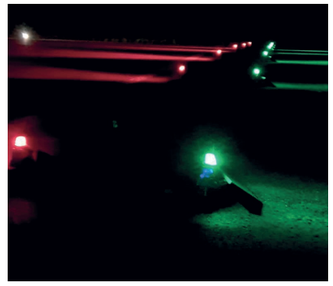
SP-401S SOLAR RUNWAY END LIGHT

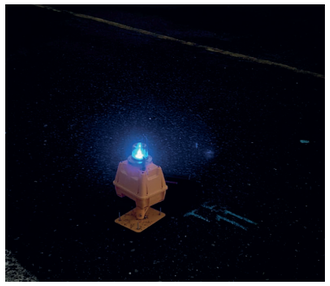
SP-401S SOLAR TAXIWAY LIGHT

UR-201 CONTROL & MONITORING UNIT

ALCMS CONTROL & MONITORING SYSTEM ADVANCED

APPLICATION PHOTOS





CASE STUDY
ETHIOPIA SEMERA AIRPORT

PROJECT KEY FACTS

Airport: Semera Airport

Location: Ethiopia

Application: Regional Airport

Runway: 2 500 m x 45 m

Solution: Permanent Solar Runway Lighting

Products: Solar Approach Lights, Solar Runway Edge Lights, Solar Threshold Lights, Solar Runway End Lights, Solar Taxiway Lights, Solar Turning Pad Lights, ALCMS Advanced, UR-201 Control & Monitoring Unit, OCT-401 Charger, UR-1 Wireless Controller

Customer: Ethiopian Airlines

Year of Installation: 2021

OVERVIEW

S4GA supplied Solar Airfield Lighting System to Semera Airport in Ethiopia. The solution is used at the Ethiopian Airport on a permanent basis. It is for the second time that Ethiopian Airlines – the Airport Operator, decided to go solar with S4GA runway lighting for its projects.

CHALLENGE

The main challenge for the Airport in choosing AFL was to get around the problem of unreliable electrical power supply in the region – which bring a high risk of a blackout scenario. The expensive and time-consuming installation of airfield lighting was another challenge that had to be solved. After careful examination of the Airport's requirements, it was obvious that conventional wired runway lighting wouldn't meet any of them. At that point, the Airport's Authority started looking for alternative solutions.

SOLUTION

Among key factors that pointed to S4GA as the best fit for the Semera Airport, should be mentioned:

- Good experience with S4GA – in 2018 Ethiopian Airlines acquired S4GA Solar Runway Lighting for its other airport located in Jijiga.
- Airfield lighting operates 365 days a year on solar energy solely – no need for an electrical power supply
- Low Investment – S4GA Solar system cost is 30% lower compared to conventional airfield lighting
- Fast project implementation
- Only minimum maintenance which takes less than 1% of the AGL system's total cost
- Compliance with international aviation standards such as ICAO, FAA, STANAG

CASE STUDY
ETHIOPIA SEMERA AIRPORT

S4GA PRODUCTS

SP-401S SOLAR APPROACH LIGHT

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

SP-401S SOLAR RUNWAY EDGE LIGHT W/Y

SP-401S SOLAR RUNWAY THRESHOLD LIGHT

SP-401S SOLAR RUNWAY END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

SP-401S SOLAR TURNING PAD LIGHT

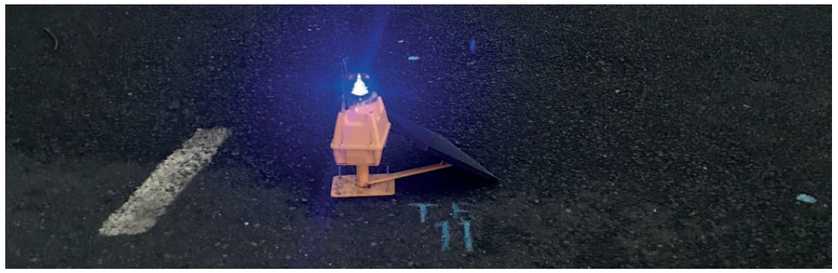
OCT-401 CHARGER

ALCMS CONTROL & MONITORING SYSTEM ADVANCED

UR-201 CONTROL & MONITORING UNIT

UR-1 WIRELESS CONTROLLER

APPLICATION PHOTOS



CASE STUDY
FRANCE CHARTRES-CHAMPHOL AERODROME

PROJECT KEY FACTS

Airport: Chartres-Champhol Aerodrome

Location: France

Application: Regional Airport

Runway: 840 m x 25 m

Solution: Solar LED
Airfield Lighting System

Products: Solar Runway Edge Lights, Solar Runway Threshold End Lights, UR-201 Control & Monitoring Unit, ALCMS Basic

Year of Installation: 2017

OVERVIEW

S4GA supplied solar airfield ground lighting for French Airport – Aérodrome de Chartres – Champhol. The contract was executed by S4GA French partner – ALPHA-AIRPORT. It was the first solar AGL installation in France.

CHALLENGE

Chartres – Champhol Aerodrome is a regional airport located in north-central France. Equipped with a hard runway of 840 m x 25 m the aerodrome has been supporting general aviation since the nineteenth century. In 2017 Airport Authorities decided on the runway upgrade with a new airfield lighting system. Among many requirements, a new illumination solution had to ensure the highest reliability, be economically advantageous, and compliant with international aviation regulations.

S4GA was chosen as the only system that met all of the client's criteria.

SOLUTION

S4GA offered a solar runway lighting system as the best solution for Chartres – Champhol Aerodrome. It does not require any electrical infrastructure, installation is fast, and maintenance is simple. Thus, aerodrome gets a bulk of advantages:

- No trenching works
- No electricity bills
- Only 3 months for complete project implementation
- Fully compliant with EASA
- System approved by DGAC (French Civil Aviation Authority)

Total investment in S4GA solar system is 30-50% lower compared to wired runway illumination. Operational costs are close to zero – the system operates on solar energy.

Simple maintenance makes S4GA system even more attractive solution for aerodromes: it's all about replacing batteries once in 2-3 years and cleaning solar panels once in a few weeks.

CASE STUDY
FRANCE CHARTRES-CHAMPHOL AERODROME

S4GA PRODUCTS

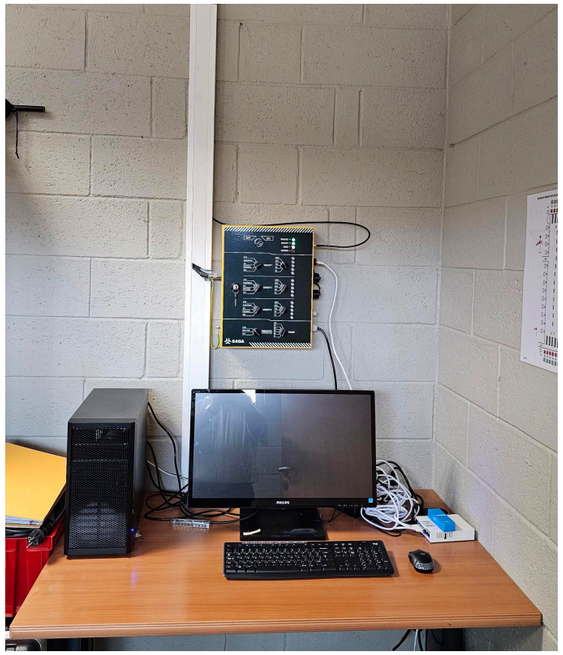
SP-401S SOLAR RUNWAY EDGE LIGHT

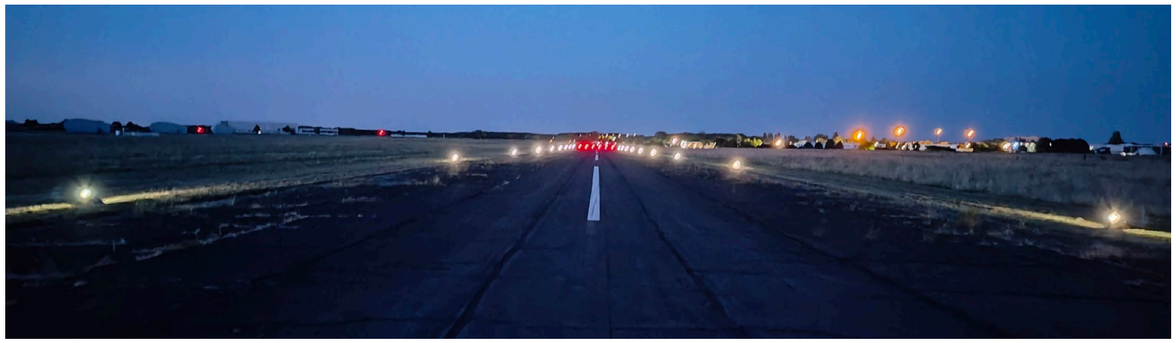
SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

UR-201 CONTROL & MONITORING UNIT

ALCMS CONTROL & MONITORING SYSTEM BASIC

APPLICATION PHOTOS





CASE STUDY
GREECE THESSALONIKI AIRPORT

PROJECT KEY FACTS

Airport: Thessaloniki International Airport Macedonia

Location: Greece

Application: The 3rd busiest international airport in Greece

Solution: Solar LED Runway Lighting System

Products: Solar Runway Lights, Solar Threshold End Lights, UR-201 Control & Monitoring Unit, ALCMS Basic Control & Monitoring System

Buyer: Fraport

Year of Installation: 2017

OVERVIEW

Thessaloniki Airport (officially Thessaloniki Airport "Makedonia") is the third largest international airport in Greece operated by Fraport. The airport has two runways equipped with ILS navigation systems.

Few years ago Greek government launched the upgrade program for Thessaloniki and few other airports and handed it over to Fraport Greece. For Thessaloniki, the project included extension of Runway 10-28 with the additional modernization of runway 16-34.

CHALLENGE

Despite the fact that both runways have been closed for reconstruction, the airport still had to continue flight operations: there are no similar airports nearby where flight operations from Makedonia Airport could be transferred to.

Fraport started looking for temporary runway lighting with strict requirements:

- certified and compliant with ICAO regulations
- AGL system should operate nonstop 24/7
- Delivery within a month – which is extremely short period for implementation of such project

SOLUTION

S4GA offered solar LED runway lighting system which fully met Fraport's requirements:

- S4GA solar AGL is compliant with ICAO Annex 14 and certified by Intertek
- It operates 365 days on solar energy
- S4GA ALCMS – Airfield Lighting Control and Monitoring System – allows control of solar runway lighting from Airport Tower
- the Company managed to manufacture and deliver the system within one month.

CASE STUDY
GREECE THESSALONIKI AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

UR-201 CONTROL & MONITORING UNIT

ALCMS CONTROL & MONITORING SYSTEM BASIC

APPLICATION PHOTOS

CASE STUDY
INDONESIA
NABIRE AIRPORT

PROJECT KEY FACTS

Airport: Nabire Airport

Location: Indonesia

Application: Domestic Airport

Runway Length: 1 400 m

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights, Solar Taxiway Edge Lights, Halogen PAPI Lights, UR-201 Control & Monitoring Unit, UR-101 Handheld Controller, OCT-401 Charger

Buyer: Directorate General of Civil Aviation (Indonesia)

Year of Installation: 2022

OVERVIEW

S4GA has supplied Nabire Airport in Indonesia with Solar Airfield Lighting System. It's for the second time, that an airport located in the Papua region chooses S4GA Solar Runway Lighting Solution.

CHALLENGE

Douw Aturure Airport is a domestic airport located in Nabire Regency, Papua, Indonesia. In recent years, due to runway deterioration, the Directorate General of Civil Aviation in Indonesia decided to start a runway rehabilitation project. The renovation plan included acquiring a new airfield lighting solution, that would upgrade the safety of the flight operations. The main challenge in choosing a new runway lighting system was to get around the problem of expensive and time-consuming installation – one of the main issues when choosing a conventional, wired solution.

SOLUTION

To overcome issues of costs and installation time, the Airport Operator considered a portable lighting system. However, after learning about the benefits of solar technology, it was decided that S4GA Solar AGL would be the best choice that met all of the Airport criteria.

- Low Investment – 30% lower costs compared to wired airfield lighting
- No expensive and time-consuming installation – no civil works, no cables, no electrical substations are required
- ZERO electricity bills – solar power in Nabire is enough to keep the runway operational 365 days a year using only solar energy
- Low cost of maintenance – everything can be performed by airport people, no need to hire an external contractor
- Compliance with international aviation standards – such as ICAO, FAA, STANAG
- Good experience with S4GA Solar AGL in the Papua region – In 2020 Nadzab Airport acquired S4GA Solar Runway Lighting. Since that time S4GA AGL system has been in use, proving to meet the highest standards in terms of safety and overall performance.

CASE STUDY
INDONESIA
NABIRE AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY EDGE LIGHT

SOLAR PAPI LIGHT

UR-201 CONTROL & MONITORING UNIT

UR-101 HANDHELD CONTROLLER

OCT-401 CHARGER

APPLICATION PHOTOS

CASE STUDY
AFRICA
IVORY COAST

PROJECT KEY FACTS

Airport: Mine airstrip, Ivory Coast

Location: Africa

Application: Mine Airstrip

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights, Solar PAPI Lights, Solar Engine, UR-201 Control & Monitoring Unit,

Buyer: Endeavour Mining

Year of Installation: 2019

OVERVIEW

S4GA solar runway lights have been supplied to a gold mine airstrip in Ivory Coast (Côte d'Ivoire), West Africa. The system is used as a permanent lighting solution for daytime and night flight operations.

CHALLENGE

Endeavour Mining is one of the top global gold producers that owns and operates the gold mines in Côte d'Ivoire, Burkina Faso, and Mali. Because of the specific location of the Côte d'Ivoire mine, the fastest and the most suitable way for transfer is air transport. Thus, airstrip upgrade was the priority for the Company.

Solutions presented to Endeavour Mining had to be compliant with international civil aviation regulations and the client's specific criteria. Every supplier who wanted to deal with the Company had to provide the highest quality products and full compliance with aviation standards.

SOLUTION

S4GA offered a solar airfield lighting system that proved to meet all the Airport's criteria:

- Independent from the electrical grid
- Operates 365 days a year on solar energy
- Pilot-controlled
- Fast and easy installation
- Minimum maintenance required
- Resistant to sands - lights are IP-67 approved
- Resistant to the wind- lights can withstand wind loading and jet blast of 240 kph

All S4GA airfield lighting products have passed multiple environmental tests and can withstand the most extreme weather conditions – including Harmattan winds of West Africa.

CASE STUDY
AFRICA
IVORY COAST

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SOLAR PAPI LIGHT

SOLAR ENGINE

UR-201 CONTROL & MONITORING UNIT

APPLICATION PHOTOS

CASE STUDY
LITHUANIA ALEKSOTAS AIRPORT

PROJECT KEY FACTS

Location: Lithuania

Application: Domestic Airport

Solution: Solar Runway Lighting System

Products: Solar Runway Edge Lights, Solar Runway Threshold End Lights, Solar Taxiway and Apron Lights, UR-201 Control & Monitoring Unit, UR-101 Handheld Controller

Buyer: Kaunas Municipal Government

Year of Delivery: 2019

OVERVIEW

S. Darius and S. Girėnas Airport (or Aleksotas Airport) is a domestic Lithuanian aerodrome located near the city of Kaunas. This is a civil airport which is primarily used by local flight schools and air clubs.

In 2017, local government decided to renovate airport for business and general aviation. The renovation program included installation of airfield lighting system at an aerodrome. The aerodrome was never equipped with any AGL system before.

CHALLENGE

The main challenge for airport management was to find cost-effective, and ICAO certified high-quality airfield lighting system. Due to limited budget set by government for this project, all offers received from suppliers of **traditional hard-wired runway lighting**, have been rejected. Airport budget was not enough for traditional wired runway lighting.

In the meantime, portable airfield lights –which were much cheaper - did not fit airport needs. Portable lights are designed for temporary usage, they require recharging from time to time. Whereas Kaunas Airport was looking for permanent lighting system. Airport management started looking for alternative solutions. They approached S4GA – EU-based manufacturer of certified airfield lighting systems – and requested the offer.

SOLUTION

S4GA offered **permanent solar runway lighting** system certified and compliant with ICAO regulations. The system is designed for permanent applications, it operates 365 days on solar energy. Control and monitoring of AGL is performed by UR-201 Unit installed in the ATC room. The Unit allows AGL **control from the ground and from the air.**

Installation of S4GA system was done by FIMA –one of the leading systems integrators working in Baltic Region. For this airport, FIMA engineers designed special mounting stakes for ground surface. It saved runway surface from drilling the holes for standard mounting plates.

The cost of S4GA solar airfield lighting was **few times less** than traditional cabled lighting. The Customer was satisfied with S4GA system in terms of both financial and technical outcome.

CASE STUDY
LITHUANIA ALEKSOTAS AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

UR-201 CONTROL & MONITORING UNIT

UR-101 HANDHELD CONTROLLER

APPLICATION PHOTOS

CASE STUDY
LITHUANIA KYVIŠKIŲ AIRPORT

PROJECT KEY FACTS

Airport: Kyviškių Airport

Location: Lithuania

Application: Domestic Airport

Runway: 540 m

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights,101 Handheld Controller, OCT-401 Charger

Buyer: Vilnius Gediminas Technical University

Year of Installation: 2022

OVERVIEW

S4GA has supplied Kyviškių Airport in Lithuania with Solar Airfield Lighting System. It's for the second time, that an airport located in Lithuania chooses S4GA Solar Runway Lighting Solution.

Antanas Gustaichis Aviation Institute of the Vilnius Gediminas Technical University is among the top 2.1% of Universities in the World and scores the highest notes in Lithuania in terms of expertness and applied technology. The Kyviškių Airport owned by the Institute is used mainly for pilots' training.

CHALLENGE

As the Airport is a part of a government-owned institute, it has to provide the highest standards for its Users in order to perform VFR night training and to ensure its night flight operational safety. The airport started to look for a reliable runway lighting system. The key factors in choosing the tender winner regarded the certification and economical aspects of the proposed solution.

SOLUTION

S4GA Solar Runway System has been recommended to the Airport's Authorities by the Pilots who'd seen it at the Aleksotas Airport which acquired S4GA System in 2019. After a thoughtful examination, our system proved to be the best matching solution for the Kyviškių Airport as well. S4GA Solar AGL demonstrates its superiority over other systems, by not only being highly reliable but also by being a user-friendly and a cost-cutting solution:

- 30% lower cost - NO expensive civil works (no need for MAINs power supply, building complex electrical network or substations to run S4GA system)
- ZERO electricity bills - S4GA system works solely on solar energy
- Low cost of maintenance - everything can be performed by airport personnel, no need to hire an external contractor
- Fast project implementation
- Certification by Transport Competence Agency
- Compliance with international aviation standards (ICAO, FAA, EASA, CASA, TP312)
- Good experience with S4GA Solar AGL in the Lithuanian region. In 2019 Aleksotas Airport acquired S4GA Solar Runway Lighting. Since that time, S4GA system has been in use proving to meet the highest standards in terms of safety and overall performance.

CASE STUDY
LITHUANIA KYVIŠKIŲ AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

UR-101 HANDHELD CONTROLLER

OCT-401 CHARGER

APPLICATION PHOTOS

CASE STUDY
MALDIVES DHAALU AIRPORT

PROJECT KEY FACTS

Airport: Dhaalu Airport

Location: Kudahuvadhoo Island, Maldives

Application: Regional airport located on remote island

Runway: 1 800 m x 30 m

Solution: Complete Solar LED Airfield Lighting System

Products: Solar Runway Lights, Solar Threshold End Lights, Solar Taxiway Lights, Solar PAPI, Solar engine for PAPI, UR-201 Control & Monitoring Unit, ALCMS Basic Control & Monitoring System

Year of Installation: 2016

OVERVIEW

Dhaalu Airport is a category 3C domestic airport located in Kudahuvadhoo Island. Airport is designed to accommodate DASH-8, ATR – 72 & 42 Aircraft and private jets.

The airport was developed by reclaiming land from the Dhaalu Kudahuvadhoo lagoon and according to local news sources, approximately USD 20 million were invested in the project.

CHALLENGE

Airport managing company has been working toward design of conventional lighting system with one of Maldivian engineering companies. After design phase has been accomplished it turned out that valuation of the system significantly exceeded airport budget planned for AGL. In order to find more affordable solution airport started looking for alternatives.

SOLUTION

S4GA company responded with an offer to supply a complete solar LED airfield lighting system to Dhaalu Airport. As a result:

- Budget required for S4GA solar AGL system was lower than for conventional lighting.
- Airport is located in the area where electricity can only be produced by diesel generator which is expensive and not ecofriendly. S4GA solar lighting operates 365 days on solar energy.
- S4GA solar AGL has 5-level protection against system failure which minimizes the risk of total AGL breakdown; in case of any light(s) malfunction, airport personnel is immediately notified by SMS about the problem and which lamp has a problem.

The system is compliant with ICAO Annex 14, all required certificates and technical specifications were provided accordingly. S4GA solar AGL has been approved by Maldivian Civil Aviation Authority.

CASE STUDY
MALDIVES DHAALU AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

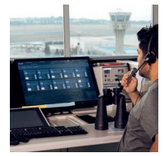
SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

SOLAR PAPI LIGHT

SOLAR ENGINE FOR PAPI

UR-201 CONTROL & MONITORING UNIT



ALCMS CONTROL & MONITORING SYSTEM BASIC

APPLICATION PHOTOS

CASE STUDY
NORTH AFRICA MILITARY AIRBASE

PROJECT KEY FACTS

Airport: Military Air Base

Location: North Africa

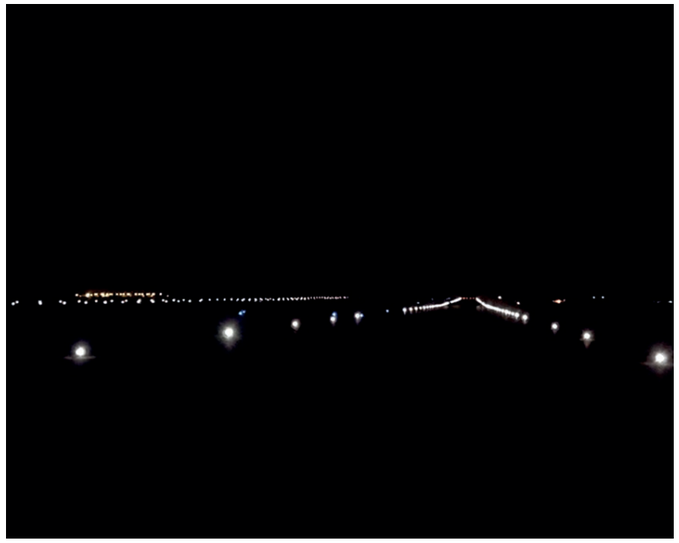
Application: Military airport located in African desert

Runway: two runways of 3 000 m

Solution: Solar LED Airfield Lighting System

Products: Solar Runway Lights, Solar Threshold End Lights,
Solar Taxiway Lights, PAPI, WDI, Taxiway Retro Reflective Markers, Guidance Signs, UR-201 Control
& Monitoring Unit

Year of Installation: 2015



OVERVIEW

In 2015 S4GA has been contacted by local African construction company planning to install airfield lighting at military airbase. Customer considered conventional lighting however has very little experience in area of airfield lighting.

Scope of work was: to illuminate 3.000 m runway and parallel taxiway that was used by air forces as secondary runway.

CHALLENGE

The airport was equipped with old airfield lighting system that was partially vandalized and did not work properly. Airbase power supply was unreliable and based 100% on power generator. The solution was to install new airfield ground lighting.

However, the main issue that made almost impossible to use hard-wired runway lighting was lack of main electrical power supply as airport is located in a desert.

SOLUTION

Alternative solution for this airfield was either using diesel generator or solar airfield lighting.

S4GA offered solar LED airfield lighting system that requires neither electrical power supply nor building a complex power supply network (CCRs, transformers, cables, etc.). In North Africa where photovoltaic potential is one of the highest on the planet, S4GA solar AGL operates 365 days a year on solar energy.

Offered solar system requires minimum maintenance – End Customer is expected to exchange batteries once in 2-3 years – which is equal to less than 1% of AGL system total cost.

Installation and commissioning of a complete runway lighting has lasted less than 4 weeks. In case of traditional wired system, it would take few months at least.

CASE STUDY
NORTH AFRICA MILITARY AIRBASE

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

PAPI LIGHT

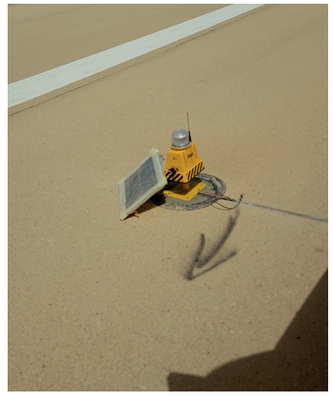
WIND DIRECTION INDICATOR

TAXIWAY EDGE RETRO REFLECTIVE MARKER

GUIDANCE SIGN

UR-201 CONTROL & MONITORING UNIT

APPLICATION PHOTOS



CASE STUDY
NORTH AFRICA REMOTE MILITARY AIRBASE

PROJECT KEY FACTS

Airport: Military Airbase

Location: North Africa

Application: Military airport located in African desert

Solution: Solar LED Airfield Lighting System

Products: Solar Runway Lights, Solar Threshold End Lights, Solar Taxiway Lights, PAPI, UR-3 PAPI Controller- Converter, Solar Engine for PAPI, Solar WDI, Taxiway Retro Reflective Markers, UR-201 Control & Monitoring Unit, ALCMS Basic, OCT-401 Backup Chargers, Airfield Lighting Layout

Year of Delivery: 2019

OVERVIEW

S4GA supplied complete permanent solar airfield lighting system to military airbase located in African desert. This is the second project that S4GA did for the current Customer.

In 2015 S4GA delivered solar airfield lighting system to their another air base. The Customer was satisfied with S4GA products and, few years later, they requested S4GA for the second solar AGL system.

CHALLENGE

According to Customer's requirements, airfield lighting system had to be delivered and installed within only 4-week time. Traditional hard-wired runway lighting is impossible to install in such short period of time. Thus, the Customer started looking for alternative solutions.

Another challenge was lack of reliable constant power supply in the region. For airport it means sudden interruptions in airfield lighting work and acquisition of additional power generators to secure such interruptions.

SOLUTION

S4GA solar airfield lighting system has been already recognized as the best solution for remote airfields among civil and military customers.

S4GA lighting does not require any electrical infrastructure - the system **operates 365 days on solar** energy. No cables, CCRs, transformers, or any other electrical network is needed which makes installation of S4GA system much faster and easier than traditional hard-wired lighting.

Airfield lights are equipped with built-in power banks providing high level of autonomy of the lights. Each light is also connected to individual optimally tilted solar panel. In this way, every lighting unit in S4GA system has its own distributed power source and is independent from the other units. Due to power balance between energy consumed by lamps and energy produced by solar panels, S4GA solar AGL does not require any additional power sources except the sun.

S4GA runway lighting was manufactured, delivered and installed at the airbase within 4-week time as required. Now airbase is ready for night flight operations.

CASE STUDY
NORTH AFRICA REMOTE MILITARY AIRBASE

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

TAXIWAY EDGE RETRO REFLECTIVE MARKER

PAPI LIGHT

UR-3 PAPI CONTROLLER-CONVERTER

SOLAR ENGINE FOR PAPI

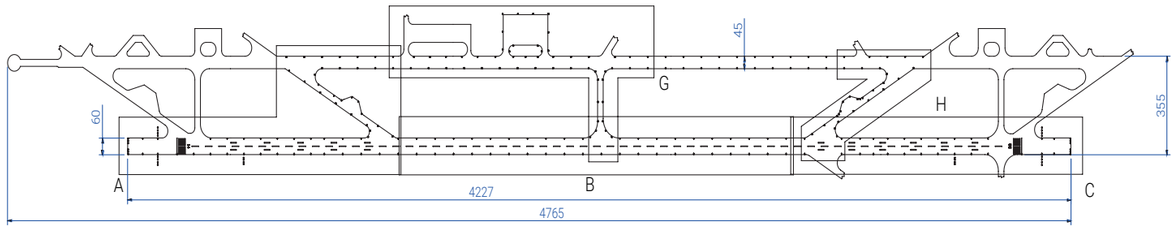
WIND DIRECTION INDICATOR

UR-201 CONTROL & MONITORING UNIT

ALCMS CONTROL & MONITORING SYSTEM BASIC

OCT-401 BACKUP CHARGER

S4GA AIRFIELD LIGHTING LAYOUT



APPLICATION PHOTOS

CASE STUDY
PAPUA NEW GUINEA NADZAB AIRPORT

PROJECT KEY FACTS

Airport: Lae Nadzab Airport

Location: Papua New Guinea

Application: Regional Airport

Runway length: 2 439 m

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights, UR-101 Handheld Controller, OCT-401 Charger

Buyer: National Airports Corporation

Year of Installation: 2020

OVERVIEW

Together with our partner Perfect Airport Solutions, S4GA supplied a solar airfield lighting system to Nadzab Airport in Papua New Guinea. The airport will use solar AGL for daytime and night flight operations during the airport redevelopment project.

CHALLENGE

Nadzab Airport is a regional airport in Papua New Guinea operated by NAC (National Airports Corporation in Papua New Guinea). It is served by both private and regional aircraft with domestic flights. With a growing demand for cargo and passenger traffic in the region, the Government of the Independent State of Papua New Guinea undertook the Nadzab Airport Redevelopment Project. To keep the Airport operational during runway rehabilitation works, it was decided to acquire a temporary AGL system.

SOLUTION

After thoughtful consideration, it was the S4GA solar-powered airfield lighting that proved to meet the airport's requirements in terms of safety, flexibility, and implementation time. The key factor that pointed to S4GA AGL as the best solution for the project was its improved operational safety. As a traditional, wired solution would have exposed cabling (which could be hazardous during the construction work) Customer opted for a more suitable and safe system. Additionally, S4GA non-wired solution proved to be much faster to implement. It was also quick and easy to rearrange following the construction works progress.

- No trenching works and no electrical infrastructure are required to run S4GA solar lighting
- Easy installation and maintenance that can be performed by local engineers
- Power-safe AFL that keeps the airport operational regardless of power supply issues
- Close to zero operational cost
- Full remote control of S4GA runway lighting from the ATC Room.
- Compliance with international aviation regulations – ICAO, FAA, EASA, and STANAG.

CASE STUDY
PAPUA NEW GUINEA NADZAB AIRPORT

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

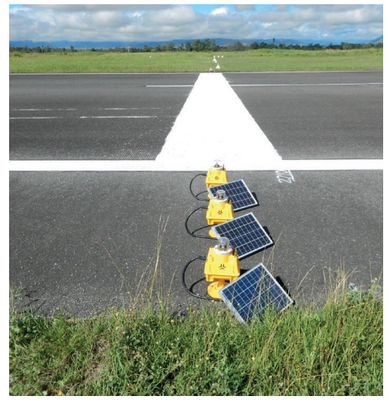
SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY LIGHT

UR-101 HANDHELD CONTROLLER

OCT-401 CHARGER

APPLICATION PHOTOS



CASE STUDY
POLAND WARSAW-RADOM AIRPORT

PROJECT KEY FACTS

Airport: Warsaw - Radom Airport

Location: Poland

Application: International Airport

Solution: Temporary Solar Obstruction/ Barricade Lighting

Products: SP-102S Obstruction Lights, OCT-102S Charger, Rubber Pads for SP-102S Lights

Buyer: Warsaw - Radom Airport

Year of Installation: 2023

OVERVIEW

The Warsaw - Radom Airport, third airport to service Warsaw passangers in Poland, sought a dependable lighting solution that would meet EASA/ICAO standards and ensure safe operations. When faced with the challenges of certification, delivery time, and design requirements, the airport turned to us for our expertise in providing innovative lighting solutions.

CHALLENGE

As an international airport, Warsaw - Radom Airport had to adhere to stringent certification standards, including those set by the European Union Aviation Safety Agency (EASA). Compliance with EASA regulations was critical for all lighting components, including the SP-102S obstacle (OBS) lights. The airport needed a lighting system that would be fully compliant and certified for international use.
Time was also a significant challenge. The airport had already opened to the public, requiring a quick implementation of the lighting system to ensure the safety and efficiency of its operations. The project needed a partner who could deliver within a tight schedule without compromising on quality.

SOLUTION

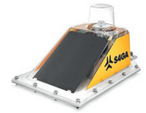
S4GA emerged as the ideal choice for Warsaw - Radom Airport due to several key factors. One of the primary considerations was S4GA's SP-102S OBS lights, which were certified for international airport use, meeting the rigorous EASA standards. This certification ensured that the lighting system complied with all necessary regulations, providing peace of mind for the airport authorities.

Additionally, S4GA's lighting system offered a complete self-enclosed design, with solar panels integrated within the lighting units. This design not only provided an aesthetically pleasing solution but also offered the necessary battery capacity and appropriately sized solar panels to operate efficiently in Poland's diverse climate throughout the year.

Despite the time constraints, S4GA successfully met the airport's requirements and delivered a reliable lighting solution within the specified timeframe. To ensure a seamless transition and optimal utilization of the lighting system, the airport's technical team participated in a comprehensive, hands-on technical training session provided by S4GA's Center of Excellence (CoE), taking advantage of their proximity.

CASE STUDY
POLAND WARSAW-RADOM AIRPORT

S4GA PRODUCTS



SOLAR OBSTRUCTION LIGHT

OCT-401 CHARGER

APPLICATION PHOTOS

CASE STUDY
SCOTLAND CAMPBELTOWN AIRPORT

PROJECT KEY FACTS

Airport: Campbeltown Airport

Location: Scotland

Application: Regional Airport

Runway: 1 412 m

Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold Lights, Solar Runway End Lights, Solar Threshold End Lights, Solar Taxiway Edge Lights, Solar Turning Pad Lights, ALCMS Basic, UR-201 Control & Monitoring Unit, UR-101 Handheld Controller, UR-3 Halogen PAPI Controller – Converter, OCT-401 Charger, Uninterruptible Power Supply (UPS) for PAPI Lights

Buyer: Highlands And Islands Airports Limited (HIAL)

Year of Installation: 2022

OVERVIEW

S4GA supplied Solar Airfield Lighting to Campbeltown Airport in Scotland. The contract was executed by Dewhurst Airfield Services Ltd.

S4GA SOLAR AGL FOR THE SCOTTISH AIRPORT

S4GA Solar AGL system replaced a previously used battery-power solution. The old system required a daily recharge, which was a time-consuming inconvenience for the airport team. Therefore, with the runway refurbishment project, Airport Operator decided to source a lighting system that, while being available 24 hrs per day, wouldn't need a daily recharge. The new runway lighting solution had also to be easy to install, wireless, and remotely controlled. After performing a feasibility study it was clear - S4GA Solar AGL proved to be the best solution. Not only it met all of the Customer requirements, but also proved to be a viable lighting system for the harsh Scottish environment.

S4GA ALCMS AT CAMPBELTOWN AIRPORT

The S4GA Airfield Lighting Control and Monitoring System was installed at Campbeltown Airport alongside the S4GA solar technology. The system is designed to provide full remote control & monitoring of runway lighting.

CONTROL FUNCTIONS OF S4GA ALCMS:

- Grouping of entire airfield lighting in 3 major groups
- Control of entire lighting system and groups of lights
- 5-step intensity level setup for a particular group of runway lights and PAPI
- Operating modes setup (Visible, NVG, Remote, Autonomous)
- Timer setup (for VHF-activated and GSM-activated modes)

MONITORING FUNCTIONS:

- Individual light Status Monitoring
- Monitoring of UR-201 Control Unit status
- The preventive Maintenance function allows for planning maintenance works for individual equipment items.

Moreover, ALCMS installed by the Campbeltown Airport allows to collect light information by S4GA headquarters in Poland. Thanks to this unique feature of our ALCMS, our Team can not only provide up-to-date technical support but also by collecting light data we can constantly improve our system and bring solar airfield lighting solutions to the next level.

CASE STUDY
SCOTLAND CAMPBELTOWN AIRPORT

OCT-401 CHARGER

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

SP-401S SOLAR RUNWAY EDGE LIGHT W/Y

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR RUNWAY THRESHOLD LIGHT

SP-401S SOLAR RUNWAY END LIGHT

SP-401S SOLAR TAXIWAY EDGE LIGHT

SP-401S SOLAR TURNING PAD LIGHT

ALCMS CONTROL & MONITORING SYSTEM BASIC

UR-201 CONTROL & MONITORING UNIT

UR-101 HANDHELD CONTROLLER

UPS FOR PAPI LIGHTS

UR-3 HALOGEN PAPI CONTROLLER - CONVERTER

APPLICATION PHOTOS

CASE STUDY
SCOTLAND
TIREE AIRPORT

PROJECT KEY FACTS

Airport: Tiree Airport

Location: Scotland

Application: Regional Airport

Runway Length:

Rwy 1: 1360 m

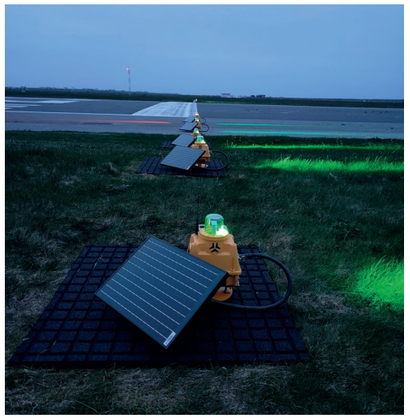
Rwy 2: 800 m

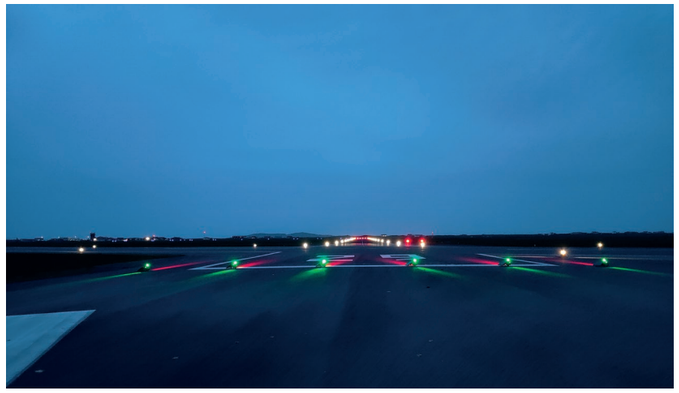
Solution: Permanent Solar Runway Lighting

Products: Solar Runway Edge Lights, Solar Threshold End Lights, LED PAPI, UR-101 Handheld Controller, OCT- 40 Charger

Buyer: Highlands and Islands Airports

Year of Installation: 2023





OVERVIEW

Tiree Airport, located in Northern Scotland, was in need of an upgraded lighting system. They had been using an outdated portable system that required constant recharging and lacked sufficient photometrical output.
After successfully installing the S4GA Solar System in Campbeltown Airport supported by Dewhurst Airfield Services, the HIAL (Highlands and Islands Airports) chose the same solution for Tiree.

CHALLENGE

One of the main challenges of this project was the airport's location on an island, making accessibility an issue for maintenance of a conventional lighting system. Additionally, Tiree experiences limited sun energy during the winter months, which posed limitations for a solar-powered system. However, considering the limited airport operations during winter, the airport accepted the operational limits of the Solar AGL system provided by S4GA.

SOLUTION

Following the successful installation of S4GA Solar AGL at Campbeltown Airport, Airport Tiree recognized its effectiveness and made the decision to implement the same solution. For S4GA Solar Airfield Lighting, Tiree airport challenges are not a problem due to its unique features and capabilities.

- Despite the airport's location on an island, the system's design ensures accessibility for maintenance without the need for complex infrastructure typically associated with conventional lighting systems.
- Moreover, S4GA's Solar AGL system is designed to operate efficiently even with limited sun energy during the winter months, allowing it to meet the airport's requirements.
- The airport's acceptance of the operational limits during winter further demonstrates the flexibility and suitability of the S4GA solution for challenging environments.

S4GA LED PAPI IN THE UK

Notably, this project marks the debut of S4GA LED PAPI in the UK, a significant milestone. Prior to the system's official commissioning, the Precision Approach Path Indicator (PAPI) underwent a specialized "Flight calibration" to ensure precise visual guidance for pilots. S4GA has been positively approved! This meticulous testing further reinforces the reliability and exceptional performance of the S4GA system!

CASE STUDY
SCOTLAND
TIREE AIRPORT

APPLICATION PHOTOS

S4GA PRODUCTS

SP-401S SOLAR RUNWAY EDGE LIGHT W/W

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

SP-401S SOLAR TAXIWAY EDGE LIGHT

OCT-401 CHARGER

UR-201 CONTROL & MONITORING UNIT

UR-101 HANDHELD CONTROLLER

UPS FOR PAPI

LED PAPI

CASE STUDY
THAILAND PHETCHABUN AIRPORT

PROJECT KEY FACTS

Airport: Phetchabun Airport

Location: Thailand

Application: Regional Airport

Solution: Solar Taxiway Lighting

Products: Solar Taxiway Lights, UR-101 Handheld Controller

Buyer: Phetchabun Airport

Year of Installation: 2020

OVERVIEW

In 2020 S4GA supplied Phetchabun Airport in Thailand with solar taxiway lights. The lighting system is used as a permanent illumination of airport taxiways in bad weather and during night flight operations.

CHALLENGE

Phetchabun Airport is a regional airport in the Lom Sak District in Phetchabun Province in the northern region of Thailand. The airport is used both for private and military purposes.

In 2020 the Aiport Authority decided on the runway upgrade with taxiway lights and started looking for a reliable yet economically advantageous solution.

After careful consideration, S4GA solar TWY lighting was selected by the Airport Authority as a cost-effective and secure solution that meets all the requirements of international aviation regulations.

SOLUTION

Among key factors that identify S4GA as the leader of the advanced solar technology should be mentioned the operational time of taxiway lights up to 600 hours on a single charge and the ability of its remote activation and control from the ATC Tower.

Taxiway Lights Key Features:

- Operate 365 days a year on solar energy
- User-replaceable battery and optics
- Easy installation and maintenance
- Remote activation and control
- Compliant with ICAO, FAA, EASA, STANAG

S4GA taxiway lights are applicable for all types of taxiways at international, regional, and domestic airports.

CASE STUDY
THAILAND PHETCHABUN AIRPORT

S4GA PRODUCTS

SP-401S SOLAR TAXIWAY LIGHT

UR-101 HANDHELD CONTROLLER

APPLICATION PHOTOS

CASE STUDY
UZBEKISTAN MUYNAK AIRPORT

PROJECT KEY FACTS

Location: Uzbekistan

Application: Domestic Airport

Solution: Solar Runway Lighting System

Products: Solar Approach Lights, Solar Runway Edge Lights, Solar Runway Threshold End Lights, Solar PAPI, Solar Engine, UR-101 Handheld Controller, OCT-401 Chargers

Year of Delivery: 2019

OVERVIEW

Muynak Airport is a regional airport located in the north-west of Uzbekistan. It serves as a regional air transport hub for domestic flights.

In recent years the government decided to grow tourism in the region. Transport infrastructure development was the very first stage. Because of remote location, the fastest and the most suitable way to transfer people to the place is air transport. Thus, airport upgrade was on the first priority.

CHALLENGE

The airport is located in a remote area without any access to electrical infrastructure. Thus, installation of wired runway lighting has not been even considered. Portable airfield lights also did not fit because airport was looking for a permanent AGL solution.

Another challenge was lack of electrical engineers available onsite 24/7. Thus, airport was looking for a solution that required minimum maintenance.

SOLUTION

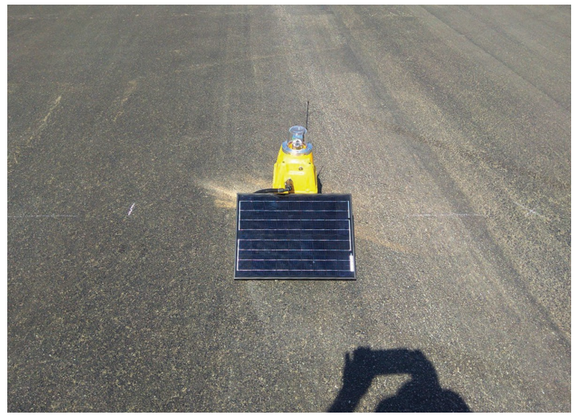
S4GA offered solar airfield lighting system which is easy in installation and requires minimum maintenance. The system does not require any electrical infrastructure – it operates 365 days a year on solar energy.

For remote activation and control of S4GA airfield lighting, a Handheld Controller was offered. Airport Operator did not require complete ALCMS with individual light monitoring. Therefore, a simple Handheld Controller fully meet Customer's requirements.

S4GA solar airfield lighting is used as a permanent runway illumination at Muynak Airport. Amount of solar energy in Uzbekistan is sufficient to keep the system fully operational for 365 days a year.

CASE STUDY
UZBEKISTAN MUYNAK AIRPORT

APPLICATION PHOTOS



S4GA PRODUCTS

SP-401S SOLAR APPROACH LIGHT

SP-401S SOLAR RUNWAY EDGE LIGHT

SP-401S SOLAR RUNWAY THRESHOLD END LIGHT

OCT-401 BACKUP CHARGER

HALOGEN PAPI LIGHT

UR-3 PAPI CONTROLLER-CONVERTER

SE-302 SOLAR ENGINE FOR PAPI

UR-101 HANDHELD CONTROLLER

S4GA

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