WORLD’S SAFEST RUNWAY LIGHTING SYSTEM
S4GA DESIGNS, MANUFACTURES & DISTRIBUTES

WORLDS’ SAFEST RUNWAY LIGHTING
45 PROJECTS IN 20 COUNTRIES

- Thessaloniki Airport is ready for solar runway lighting
- Helipad lights for South African Police
- Military airport in Libya
- Military helicopter landing zone
- Dhaalu Airport - Maldives
- Portable helipad lights for Ukraine-based Heli-operator
- Helipad lights for Belgium helicopter operator
- Venezuela Air Forces testing SP-401 solar runway lights
- Kuwait Army is testing solar portable TLOF lights
- Air ambulance helicopter base
- Temporary helipad lighting for Danish VIP air charter
- Portable runway lighting for charter company
LIBYA: SOLAR RUNWAY LIGHTING FOR MILITARY AIR BASE

BEFORE

AFTER

3.000 M RUNWAY

SOLAR & WIRELESS LIGHTING
MALDIVES: SOLAR RUNWAY LIGHTING FOR REGIONAL AIRPORT

1800M RUNWAY

SP-401 LIGHT

SOLAR A-PAPI

SOLAR RUNWAY LIGHTS
THESSALONIKI AIRPORT
GREECE, OPERATED BY FRAPORT

NO. 3 LARGEST AIRPORT IN GREECE
S4GA Belongs to Polish Government

- S4GA Major Shareholder is Polish State
- S4GA is owned by investment fund with assets of 300 mio EUR
- S4GA lighting products are compliant with ICAO standards and certified by Intertek

Poland

Government Owned

Part of Investment Fund

300 mio EUR

Certified

Intertek
100% OF OUR PRODUCTS ARE MANUFACTURED IN POLAND
Quality Control - 4 Stages

1. At Materials Delivery
2. During Manufacturing
3. After Product is Manufactured
4. Before Dispatch
S4GA QUALITY CONTROL INCLUDES RIGOROUS TESTING

PHOTOMETRY AND COLORIMETRY TESTING

HUMIDITY TESTING

IP - INGRESS PROTECTION TESTING

Fig. 1. Test sample 4770.1 in the dust chamber – after the test IP6X
S4GA CONSTANTLY INVESTS TO MAKE BETTER PRODUCTS

S4GA WILL BE THE FIRST COMPANY TO REALEASE BATTERY-POWERED

10.000 CANDELA RUNWAY LIGHT

PHOTOMETRICAL SIMULATION

THERMAL SIMULATION
S4GA products are certified in accordance with requirements of International Civil Aviation Organization (ICAO)
ICAO ANNEX 14
COMPLIANCE FOR LIGHTS:
- RUNWAY EDGE
- RUNWAY THRESHOLD
- RUNWAY END

<table>
<thead>
<tr>
<th>Applicant Name &amp; Address</th>
<th>Solution4GA sp. z o.o. Sylvanella Radomskala 57 01-476 Warsaw Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing site Name &amp; Address</td>
<td>Same as applicant above</td>
</tr>
<tr>
<td>Product(s) Tested</td>
<td>Runway Threshold Lighting unit</td>
</tr>
<tr>
<td>Ratings and principal characteristics</td>
<td>Batteries supply, rechargeable</td>
</tr>
<tr>
<td>Model(s)</td>
<td>SP-001 Runway Threshold Lighting unit (Green direction)</td>
</tr>
<tr>
<td>Brand name</td>
<td>SAGA</td>
</tr>
<tr>
<td>Relevant Standard(s)/Specification(s)</td>
<td>Annex 14 to the Convention on International Civil Aviation, Volume 1, Seventh Edition, July 2016 Appendix I, Figure A1-1b, and D.5.3.16.5</td>
</tr>
</tbody>
</table>

**Test Verification of Conformity**

On the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

<table>
<thead>
<tr>
<th>Verification Office Name &amp; Address</th>
<th>Intertek Testing Services Hangzhou 16 No. 1 Ave., Xiaobo Economic Development District, Hangzhou 310018, China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verification Number</td>
<td>180404014279ZH-93</td>
</tr>
<tr>
<td>Report Number(s)</td>
<td>180404014279ZH-004</td>
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</table>

**Verification Office**

Intertek Testing Services Hangzhou
16 No. 1 Ave., Xiaobo Economic Development District, Hangzhou 310018, China

**Verification Date**

September 03, 2018

**Signature**

Name: Patrick Chen
Position: Manager
Date: 03 September, 2018

www.intertek.com

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<td>Report Number(s)</td>
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**Verification Date**

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Position: Manager
Date: 03 September, 2018

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S4GA PRODUCT PORTFOLIO

**PERMANENT LIGHTING FOR NON-PRECISION AIRPORTS**

**AIRFIELD LIGHTING TRAILER FOR MILITARY & CIVIL**

**TEMPORARY LIGHTING FOR AIRPORT CONSTRUCTIONS**

**PORTABLE HELIPAD LIGHTING CIVIL / MILITARY / HEMS**
PERMANENT LIGHTING FOR NON-PRECISION AIRPORTS

- NO ELECTRICAL INFRASTRUCTURE
- HIGH PHOTOVOLTAIC POTENTIAL
- INCREASING FLIGHT TRAFFIC

LOCATED IN REGIONS WITH LIMITED ACCESS TO ELECTRICITY HIGH PHOTOVOLTAIC POTENTIAL INCREASING FLIGHT TRAFFIC
MODULAR DESIGN >>> ONE LIGHT SEVERAL APPLICATIONS

TEMPORARY BATTERY LIGHTING

TEMPORARY SOLAR LIGHTING

365 DAYS INSTALLED SOLAR LIGHTING

AMOUNT OF NIGHT OPERATIONS SERVED BY AIRPORT

- 3-5 OPERATIONS PER WEEK
- 7-15 OPERATIONS PER WEEK
- 15-30 OPERATIONS PER WEEK
PERMANENT AIRFIELD LIGHTING SYSTEM

DHAALU AIRPORT, MALDIVES

/// WHY S4GA ////

WORLD'S SAFEST
RUNWAY LIGHTING

OPERATES 365 DAYS
ON SOLAR

5-LEVEL PROTECTION
AGAINST SYSTEM FAILURE
AIRFIELD LIGHTING TRAILER
FOR CIVIL & MILITARY
APPLICATIONS

CONTROL & MONITORING UNIT

LOW BATTERY SMS AUTO REPORTING

CONTACTLESS CHARGING

UP TO 132x FULL PAPI (BATTERY-POWERED)
or

FULL PAPI (BATTERY-POWERED)

COMPLIANCE: ICAO Annex 14
SIDE VIEW (OPEN COMPARTMENTS)

SIDE VIEW (CLOSED COMPARTMENTS)

REAR VIEW (PAPI COMPARTMENT)

BASE FOR CONTACTLESS INDUCTIVE CHARGING

HANDLES FOR EASY DEPLOYMENT OF LIGHTS
S4GA OUTPERFORMS COMPETITORS

1200 CANDELA

600 HOURS

365 DAYS

5 LEVEL

5-LEVEL PROTECTION AGAINST SYSTEM FAILURE

- DOUBLE BATTERY
- FAILURE AUTO-REPORTING
- MANUAL ACTIVATION (IN CASE OF RADIO FAILURE)
- GSM REMOTE ACTIVATION (IN CASE OF VHF FAILURE)
- POWER SOURCE INDEPENDENT FORM CONTROL

CONTACTLESS CHARGING

LOW BATTERY

SMS REPORTING
Advantage vs Major Competitors
DURING LOW VISIBILITY CONDITIONS - LIGHTS HIGHER LIGHT OUTPUT INCREASE SAFETY OF OPERATIONS

1. HIGHEST LIGHT OUTPUT OF 1.100 CANDELA

1.200 cd

300 cd

OTHER SUPPLIERS
S4GA OFFERS CONTACTLESS CHARGING

1 HR REQUIRED TO CONNECT 120 LIGHTS

MECHANICAL FAILURE IS MOST COMMON ISSUE WITH CABLES

POWER CONNECTOR FAILURE

S4GA OFFERS CONTACTLESS (INDUCTIVE CHARGING) THAT SAVES TIME AND EXPANDS LIFESPAN OF A TRAILER
CAUTION!

LAMP #8 DOES NOT RESPOND

LIGHT IS NOT WORKING

BATTERY <20%

SUCCESS DETECTION & LOW BATTERY AUTOREPORTING VIA SMS

WARNING

LAMP #12 LOW BATTERY

PRECAUCION!
LUZ #8 NO RESPONDE
4X MORE ELECTRICAL ENERGY PRODUCED DUE TO INDEPENDENTLY INSTALLED SOLAR PANEL AND OPTIMAL TILT

Entire 20W Solar Panel facing the Sun

20W Solar Panel consists of 4 parts built into the walls

ONLY 20% OF POWER OUTPUT IS UTILIZED. WHY? ONLY ONE SIDE IS FACING THE SUN AND BECAUSE OF 90-DEGREE TILT

DESIGNED TO OPERATE 365 DAYS

S4GA SOLAR LIGHTING

TRADITIONAL SOLAR-POWERED AIRFIELD LIGHTING
EXTERNAL ANTENNA

**SAFER RADIO CONNECTION**

1. STRONGER RADIO SIGNAL

2. HIGHER RADIO RANGE

300 m

1400 m
LONG LIFESPAN AND CONSISTENT PHOTOMETRICS

POLYCARBONATE AFTER 2 YEARS

GLASS AFTER 2 YEARS
STANDARD BATTERY THAT YOU CAN BUY ANYWHERE

PRICE OF ONE BATTERY < 30 USD
EASY ACCESS IN LATIN AMERICA
EASILY REPLACABLE
ALCMS KEY FEATURES

- Individual Light Monitoring
- 5 Levels of Intensity
- Grouping of Lights
- Approach Direction Selection
- Pilot-activated lights
- Automatic Alarm Messaging (GSM)
- Optional integration of MET Reports