Lighting for Aviation
Born in the aviation industry, Midstream is intimately familiar with the operational, safety and energy efficiency features lighting specifiers require for their critical airport lighting.

Midstream’s advanced LED high-mast lighting delivers enhanced energy efficiency, improved lighting levels for airline customers and staff, better uniformity of light, increased color rendering and reduced glare to aircraft pilots and the neighboring community.

Midstream services major international hubs, small regional airports, private FBOs, military airfields and operators of aerodrome infrastructure in the U.K., Europe, Asia, Latin America and Africa. Its fixtures boast a longer product life and reliability up to 100,000 hours per fixture - and are designed to perform and keep performing in extreme and harsh weather and temperatures.

Midstream helps customers design installations that meet FAA and ICAO compliance requirements, and its fixtures outperform in new construction and retrofit applications including, aircraft stands, apron areas, hangars, de-icing areas and fuel farms.
LED Lighting Pioneers

LED technology for high-power lighting is known to all but mastered by very few. Midstream has been a pioneer in this field from the beginning.

The challenges of delivering products with very high power and advanced thermal management properties, at a cost that is economically viable, has been the research focus of Midstream from its foundation.

Those challenges have been successfully met with a suite of proven LED products suited to a full range of application sectors and performance criteria.

Midstream LED product and performance summary

<table>
<thead>
<tr>
<th>Product</th>
<th>Power (W)</th>
<th>Flux (klm)</th>
<th>Asymmetric beam</th>
<th>Symmetric beam</th>
<th>Stainless steel</th>
<th>Heat sink type</th>
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**Atlas Series**

- This series was developed specifically to comply with the requirements of UL 1598, which is a prerequisite for the North American market.
- The series was developed to provide a solution for users which need to deliver a high measured lux levels but benefit from the energy savings offered through LED technology.
- The extruded aluminium heatsink and stainless steel construction allow this range to be used in harsh conditions such as in high temperature and high salinity environments. The product is available with symmetric optics for multi-spot design solutions (e.g. remote aprons) and highly asymmetric for low-glare design solutions (e.g. MARS contact stands).
Modus Series

- This line was developed to provide a solution for users which need to replace 2 kW Metal Halide projectors.
- Users can range from military airfields to open-air repair bays which require a high lumen package but long-life and low maintenance products.
- The modular design allows for a versatile approach to lighting design, giving options to combine different power products in the same location. The extruded aluminum heatsink and stainless steel construction allow this range to be used in harsh environmental conditions.
- The single 330W module with asymmetric optic an be used as a adaptable floodlight solution for wide-ranging simple and complex applications, whereas the Modus 1200 with 1,320W LED power and narrow optics can provide an excellent solution for high-lux application.

Titan Series

- Our flagship line was developed as a high power solution to provide the performance and reliability required in mission-critical applications for the European market.
- Our unique in-house knowledge of optical systems has led to the development of our proprietary optics, delivering one of the highest degrees of asymmetry in the market and very low optical losses.
- This product line consistently out-performs the big brand competition in projects with a wide variety of applications.
Navigational Aids

- Midstream is a navigational aids solutions partner for the Airport and Aviation sectors and is able to offer a wide range of lights, portable lighting, signs and AGLs.
- Deep product knowledge and wide market presence makes Midstream the supplier of choice for global aviation projects.
- Midstream can be contracted as an integrator of all airfield, radar, meteorological and navigational systems as well as delivering design and turn-key solutions through our extensive partners network.

- Through our partners we can provide low intensity and medium intensity obstruction lights in compliance with ICAO and FAA, solar portable lights and navigational beacons.

- We can also supply the best-in-class trailer sets with remotely operated AGL beacons for existing, under-construction and military runways.
Midstream Mobile Tower

- Another market first, this unique solution provides the user the ability to apply low-glare asymmetric mobile lighting to applications where upward light above the horizontal plane is undesirable.

- Initially designed for Civil Aviation use, another key feature of this product is the ability to provide precise lighting design, accurate for the duration of the project. With a running time of 200 hours on one full tank, this solution is truly mobile and versatile.

- Multi-directionally adjustable, mobile 30ft floodlight tower with 4 highly efficient, asymmetric 326W LED Titan series floodlights, designed specifically for large-area lighting with close proximity to residential or high-traffic zones. Additional application are military and clandestine operations or rail and road construction in high-density centres.
Aircraft Stand Lighting with Mobile Tower

The Midstream Mobile Tower is a unique system that allows airside operators to commission an aircraft stand in full compliance with FAA / ICAO requirements (see below). Proprietary high-asymmetry optics throw the light to the back of stand without tilting and emitting light into the sky. Low tilt operation significantly reduces glare to pilots and ground staff. Remote control, timer or photo-cell operation allows for autonomy even on remote aprons.

Main application areas are low usage stands, remote aprons, stand reconfiguration and temporary or no-power network locations.

Two masts used in tandem can commission up to a ADGVI stand to IES RP-37-15 requirements.

= Mobile Mast unit

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**Code F**

- $E_{av} = 20$ Lux
- $u_0 = 0.251$

**Code E**

- $E_{av} = 27$ Lux
- $u_0 = 0.263$

**Code D**

- $E_{av} = 44$ Lux
- $u_0 = 0.345$

**Code C**

- $E_{av} = 88$ Lux
- $u_0 = 0.424$
Design experience

We have a very experienced in-house design team that generates compliant designs for airport projects, whether newly built or on existing high masts.

We work with the world’s leading airfield design engineers on projects around the globe, from small island aerodromes to international hubs.

Our experience extends to Multiple Aircraft Receiving Stands (MARS), access roads and equipment areas, PIPO/PIPB configuration stands, remote stands, fuel farms, OLS restriction areas, and landside and parking areas.

Because our in-house design team was involved in the development of our proprietary refraction lens, they have unique know-how of creating designs for the most challenging environments.
We offer a full lighting package to our clients, which includes a fully compliant design to FAA and ICAO standards with a breakdown of the luminaire numbers, complete installation, handling and maintenance guidance, as well as detailed mounting instructions to support the installation teams.

The package includes a light level chart and a financial investment analysis model. As-built drawings can also be provided, on request.
Retrofit

Our solution has been designed specifically to allow for fast and efficient installation of the luminaires to existing infrastructure.

The plug and play features provide for safe mounting, maintenance and demounting, whilst the adjustable bracket allows for multiple arrangements on all types of heads and crowns.

All our luminaires are supplied with an IP68 quick plug, avoiding the need for rewiring the lighting system.
Glasgow Airport, Scotland

Glasgow Airport was keen to upgrade their apron lighting to LED before the start of the 2014 Commonwealth Games in the city of Glasgow, Scotland.

The airport utilised 236 apron floodlights with a mixture of 400W HPS and 1,000w HPS projectors. The Midstream solutions replaced these with 164 LED projectors, each being 400w.

The project achieved energy savings of 61% with a 100% increase in lux levels.

Glasgow Airport finished the complete upgrade program in 3 months, achieving a saving of 106 kW and doubling light levels.
Projects

London Gatwick Airport, England

Gatwick Airport is the busiest single runway airport in the world, and as such has been pursuing a programme of stand reconfiguration and pier extensions to improve the number of aircraft movements, which involves upgrading the stand lighting to LEDs to achieve energy efficiency and improved lighting uniformity values.

Midstream is the preferred supplier to Gatwick Airport for LED apron floodlighting since 2013.
Projects

London Luton Airport, England

London Luton Airport ran a tender in 2017 for the replacement of apron lighting with LED technology, improving the light levels to meet the requirements of EASA regulation and reducing the energy demand by 40-50%.

Midstream was selected as the technology supplier to provide the lighting design and supply the luminaires. The scheme involved the use of 455W and 705W asymmetric luminaires from the Titan series on existing high-mast infrastructure.

Titan 720 floodlights on a mast which has been lowered to ground level for installation works.
Quito International Airport, Ecuador

Quito International Airport is the main airport in Ecuador. The local civil aviation authority requested that the uniformity levels be increased to a ratio of 2:1, which is double the ICAO Annex 14 requirements.

The airport ran a tender for the design, supply, installation and commissioning of a new floodlighting system based on LED technology and meeting stringent new lighting levels requirements. Midstream was awarded the tender for the entire package, including certain civil engineering works which were outsourced to a local contractor.
Projects

Newcastle International Airport, England

Newcastle International Airport was an early adoptor of LED technology on the landside parking and indoor terminal lighting. However, when additional energy savings were sought, Midstream was asked to design and implement a lighting scheme in compliance with CAP 168 requirements. These are in line with the ICAO Annex 14 requirements.

The installation achieved a high degree of uniformity and much improved lighting levels on the apron. High colour rendering index and cool white light significantly improved visibility for the ground staff and pilots.
Projects

Rome Fiumicino Airport, Italy

Midstream was successful in a tender to supply new LED apron floodlighting at Rome Fiumicino Airport. Through various subsequent packages, Midstream has become a preferred supplier for both retrofit and new build projects around the various aprons. Most of the airside is using Midstream Titan 720 floodlights.

These smart floodlights are DALI enabled, meaning they easily integrate into existing control software.
Projects
Frankfurt Airport, Germany

Frankfurt Airport is a major international hub with a capacity for 65 million passengers per year, four runways and extensive logistics and maintenance facilities. Midstream has supplied LED floodlights for the more challenging apron areas which allow compliance with EASA rules as well providing the benefit of energy savings.

One of the key features of the Titan floodlights were the low glare and high asymmetry optics which allowed to delivery compliance without any mast infrastructure changes.
Some of our aviation clients
Notes: