Helideck Lighting to meet CAA (UK) CAP437 standards
Dedicated staff deliver effective and reliable solutions that help our customers to understand and meet safety regulations and stakeholder requirements.

“Our customers value Orga as a trustworthy and experienced partner. We are proud of our reputation.”

Operational safety underpins the offshore and aviation industries’ licences to operate. Up-to-date navigational aids and obstruction lighting that meet the relevant operational needs and safety regulations are vitally important to maintaining these licences.

The future will bring even more stringent regulations. Orga can help you to meet these challenges and has three business groups that fully understand safety and operational requirements:

- **Orga Offshore** provides customised navigational aid and helideck lighting solutions for the oil and gas industry, as well as risk free power to remote location using renewable technologies such as photovoltaic and wind.
- **Orga Aviation** provides smart aviation obstruction lighting systems.
- **Orga X-proof** offers consultancy on the custom design, certification and manufacture of explosion-proof products.

As our customers operate in many different countries, we are familiar with the latest international and national regulations and safety standards. We have locally based support teams and work with international partners to deliver the right solutions and services to our customers around the world.

It is our strategy to build continually on our experience and know-how, and to develop, with our customers and the regulatory authorities, cost-effective and flexible solutions that enhance safety levels at sea, onshore and in the air.
The wider Orga organisation

Orga’s three business groups each have marketing, sales and technical resources to support the needs of their different customers, market applications and product portfolios. Each business group focuses on the requirements, trends, culture and customs of a particular market, and takes close interest in the practical requirements for products and the needs of their system installers and end-users. They have support from our research and development, marketing, sales, consultancy, production, quality control, service and logistics teams.

At Orga, we manufacture a wide range of standard products, but also have engineers and production specialists who focus on custom-made products and systems. The philosophy of our in-house product manufacturing is to deliver high-quality products, on time and right first time.

Our production area and our facilities cover more than 4000 m². We have a flexible and lean production workflow to maximise production rates, and use Kanban concepts to ensure continuity of materials supply and provide excellent responsiveness and product availability.

The clean, modern and energy-efficient environment of our logistics department incorporates materials, production, finished goods and dispatch.

Efficient management of stock levels, production and resources is ensured through our up-to-date enterprise resource planning system and long term agreements with suppliers of key materials.

We are situated close to major roads, airports (Amsterdam-Schiphol airport and Rotterdam-The Hague Airport) and sea freight (Port of Rotterdam) terminals, which enables us to offer freight-on-board and full international delivery services.

“At Orga, we value trust and customer loyalty. We respond quickly to customer requests and deliver what we promise on time.”
Orga Offshore offers innovative navigational aids and helideck lighting products, and applies the latest technology to smart and simple perimeter lights, windsocks and status lights. Our systems are recognised as being state of the art, reliable, energy saving and operationally cost-effective.

We work closely with our customers to continually develop complete solutions, including functionality such as day–night control, flash synchronisation, overvoltage protection and comprehensive performance monitoring. We understand that project stakeholders prefer to use reliable, long-life products that survive the harsh environmental conditions they will be exposed to and balance these requirements with the need to meet regulatory requirements and ensure safe operation.

When training and on-site support services are required, we have factory-based engineers available to provide installation, commissioning and troubleshooting support.

Orga Offshore works with regulatory bodies around the world and provides systems that comply with national regulations and those of the International Civil Aviation organization (ICAO), local civil aviation authorities and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

“Orga’s offshore solutions are at the forefront of design and technology, and help its customers to meet future challenges.”

The systems we supply are suitable for installations in a Zone 1 gas hazardous area. There is a calculated battery backup on every navigational aid system that guarantees the safety of the offshore structure in the event of electricity supply problems.
Offshore helideck lighting products and recommendations according to the CAA (UK)

The CAA (UK) recommendations (CAP437 - Standards for Offshore Helicopter Landing Areas) are required to be followed for the safe marking of offshore helidecks in the UK and other countries following these recommendations.

Orga has been working closely with the CAA (UK) and offshore helideck operators over many years to ensure that our helideck lighting product range meets the demanding requirements of the regulators, clients and environmental conditions. Effective, reliable helideck lighting systems are essential for safety to ensure that offshore structures are visible to pilots in all weather conditions.

We are able to meet all the helideck lighting needs of our clients providing reliable, state of the art, low maintenance and cost effective products.

---

**L85EX-G**
Helideck Perimeter Light

- **Green**
- **30Cd LED**
- **(100,000 hrs ave. life)**

Orga Offshore can offer a green 30Cd LED perimeter light which has a very long lamp life of 100,000 hours resulting in maintenance savings. The lights should be equally spaced at intervals of not more than 3 meters around the perimeter of the safe landing area.

Designed from stainless steel these fittings meet the regulatory requirements for IALA, CAP437 and IMO.

---

**L85-EX-Recessed**
Helideck Perimeter Light

- **Green long life LED**
- **CAP437 and ICAO compliant**
- **ATEX and IECex compliant**

A new generation of recessed explosion proof LED helideck perimeter lights to meet the demanding requirements of offshore environmental conditions. Based on low power long life LED technology with a lamp life up to 100,000 hours and designed from stainless steel these fittings meet the regulatory requirements for IALA, CAP437 and IMO.

---

**HWC2000EX-MkII**
Illuminated Windsock

- **Internally illuminated**
- **Optional aeronautical obstruction light available**

A wind direction indicator (windsock) should be positioned so as to indicate the wind conditions at the offshore location. The windsock should be visible during the approach of the helicopter to the deck, and should be illuminated for night time operations by means of an internal floodlight. As an option, Orga Offshore can supply this windsock with a low intensity aeronautical obstruction light (L85EX-R-xx) mounted on the top.
LED Heideck Status Light which has very low power consumption and is less than 250 millimetres in height. This low profile is very unique, and means the CAP437 compliant status light that can be mounted directly on the heideck. A Heideck Status Light system should be installed if a condition can exist on an installation which may be hazardous for the helicopter or its occupants (i.e. gas alarm). The status light signalling system should be visible 360° around the offshore structure with a flash rate of 120 flashes per minute. The system shall be fully automatic and controlled by means of a control panel in combination with the platform gas detection system.

New in 2012 is our recently developed ‘touchdown/positioning marking and heliport identification (Circle-H) lighting system’. This new product will improve safety during night flights, and is designed to reduce the so-called ‘black-hole’ effect and will eliminate the glare by the heideck floodlighting systems, while increasing the pilots’ orientation awareness when approaching the heideck.

Orga Offshore is pleased to offer a new generation lighting system that addresses all the main heideck approaching problems of today, by illuminating the Touchdown Circle and Helipad ‘H’ identification marking.

The TB-AMG-132-HFL floodlight is an ATEX and IECex certified explosion proof heideck floodlight to provide illumination, whilst still being able to be mounted directly on the heideck due to its compact design. The floodlight is manufactured with a long life lamp and is designed to meet the requirements of the tough offshore environment.

Although now replaced in CAP437 by the Touchdown/Positioning Marking and Heliport Identification Marking (Circle & H) system the need for heideck floodlighting will still exist to allow safe personal and equipment movement across the decks.

Orga Offshore can offer a range of steady burning red aeronautical obstruction lights. The lights are available in 10, 32, 50 and 200cd in order to meet the requirements of CAP437 (Chapter 4; Section 4) and our clients.

An omni-directional low intensity steady red obstruction light should be fitted to the highest point of the installation. The light should have a minimum intensity of 50 cd for angles of elevation between 0 and 15 degrees, and a minimum intensity of 200 cd between 5 and 8 degrees.

In addition the structures should be fitted with intermediate omni-directional low intensity steady red obstruction lights, which have a minimum intensity of 10 cd for angles of elevation between 0 and 30 degrees, spaced at 10 metre intervals down to the level of the landing area.
L425EX Helideck Status Light
Low power consumption
Low profile
Low maintenance

L85EX-G-Recessed Helideck Perimeter Light
Green long life LED recessed perimeter light
CAP437 and ICAO compliant
ATEX and IECex compliant

TB-AMG-132-HFL Helideck Floodlight
Impact resistant window
Compact design (<250mm)
IECex and ATEX Zone 1 certified

L85EX-G Helideck Perimeter Light
Green
30 Cd
LED (100,000 hrs ave. life)
**HTP100EX -Y/G Circle-H Helideck Lighting System**
- Low power consumption
- Highly durable
- Low maintenance

**HWC2000EX-MkII Illuminated Windsock**
- Internally illuminated
- Optional aeronautical obstruction light available
Effective, reliable helideck lighting systems are essential for safety and ensuring that offshore structures are visible to helicopter pilots in all weather conditions.

Our aeronautical obstruction lights and helideck lighting systems are supplied according to UK Civil Aviation Authority (UK CAA) CAP437 Standards and/or ICAO regulations.

- Are you looking for robust helideck lighting systems with low life-cycle costs and no maintenance requirements?
- Do you want to go for a reliable brand when it comes to helideck safety systems?
- Are you sure your helideck lighting systems comply with the latest CAP437 requirements?
- Are you familiar with the latest CAP437 and ICAO recommendations for the safety of helidecks?

**Extracts from Civil Aviation Authority - CAP437 – Standards for Offshore Helicopter Landing Areas (Chapter 4 & Appendix C)**

**Helideck Perimeter Lights**

**CAP 437 Chapter 4; Section 3.1**
The periphery of the landing area should be delineated by omnidirectional green perimeter lights visible from on or above the landing area; however, the pattern formed by the lights should not be visible to the pilot from below the elevation of the landing area. Perimeter lights should be mounted above the level of the helideck but should not exceed the height limitations specified in Appendix C, paragraph 3.2. The lights should be equally spaced at intervals of not more than three metres around the perimeter of the landing area, coincident with the white line delineating the perimeter (see paragraph 2.1). In the case of square or rectangular decks there should be a minimum of four lights along each side including a light at each corner of the landing area. Flush fitting lights may be used at the inboard (150° LOS origin) edge of the landing area where an operational need exists to move large items of equipment to and from the landing area, e.g. where a run-off area is provided there may be a need to move the helicopter itself to and from the landing area onto the adjacent run-off (parking) area. Care should be taken to select flush fitting lights that will meet the isocandela requirements stated in Appendix C, Table 2.

**Helideck Floodlighting**

**CAP 437 Chapter 4; Section 3.3**
In order to aid the visual task of final approach and hover and landing it is important that the helideck is adequately illuminated for use at night. In the past this has typically been achieved by providing systems of deck-level floodlights around the perimeter of the landing area and/or by mounting floodlights at an elevated location ‘inboard’ from the landing area, e.g. floodlights angled down from the top of a bridge or hangar. Experience has shown, however, that deck-level floodlighting systems can adversely affect the visual cueing environment by reducing the conspicuity of helideck perimeter lights during the approach, and by causing glare and loss of pilots’ night vision during the hover and landing. Furthermore, floodlighting systems often fail to provide adequate illumination of the centre of the landing area leading to the so-called ‘black-hole effect’. Even well designed and maintained floodlighting systems do not provide effective visual cueing until within relatively close range of the helideck due to the scale of the visual cues involved.

**CAP 437 Chapter 4; Section 3.5**
The new system described in paragraph 3.4 assures that effective visual cueing will be provided for the acquisition, approach, hover and landing task. In view of the weaknesses described in paragraph 3.3, it is considered that floodlighting systems have proven to be relatively ineffective for these tasks.

Their continued use for the provision of primary visual cueing is therefore not supported. However, the CAA recognises that in the past, in the absence of any viable alternative, the offshore industry has invested, in good faith, in improved helideck floodlighting systems. The CAA has no objection to systems conforming to the guidance contained in Appendix G being retained for the purpose of providing a source of illumination for on-deck operations, such as refuelling and passenger handling and, where required, for lighting the installation name on the helideck surface or as a back-up to the new lighting (see Note 2 below). Unless otherwise instructed by aircrew the floodlights should be switched off during the acquisition, approach to hover, landing and take-off phases. In addition particular care should be taken to maintain correct alignment to ensure that floodlights do not cause dazzle or glare to pilots who may be sat at the controls of a helicopter whilst on the helideck. All floodlights should be capable of being switched on and off at the pilot’s request. The floodlighting controls should be accessible to, and controlled by, the HLO or Radio Operator.
Helideck Status Light

CAP 437 Chapter 4; Section 3.6
A visual warning system should be installed if a condition can exist on an installation which may be hazardous for the helicopter or its occupants. The system (Status Lights) should be a flashing red light (or lights), visible to the pilot from any direction of approach and on any landing heading.

The aeronautical meaning of a flashing red light is either “do not land, aerodrome not available for landing” or “move clear of landing area”. The system should be automatically initiated at the appropriate hazard level (e.g. impending gas release) as well as being capable of manual activation by the HLO. It should be visible at a range in excess of the distance at which the helicopter may be endangered or may be commencing a visual approach. CAA Paper 2008/01 provides a specification for a status light system which is summarised below:

• Where required, the helideck status signalling system should be installed either on or adjacent to the helideck. Additional lights may be installed in other locations on the platform where this is necessary to meet the requirement that the signal be visible from all approach directions, i.e. 360° in azimuth.
• The effective intensity should be a minimum of 700 cd between 2° and 10° above the horizontal and at least 176 cd at all other angles of elevation.
• The system should be provided with a facility to enable the output of the lights (if and when activated) to be dimmed to an intensity not exceeding 60 cd while the helicopter is landed on the helideck.
• The signal should be visible from all possible approach directions and while the helicopter is landed on the helideck, regardless of heading, with a vertical beam spread as shown in the second bullet point above.
• The colour of the status light(s) should be red as defined in ICAO Annex 14 Volume 1 Appendix 1, Colours for aeronautical ground lights.
• The light system as seen by the pilot at any point during the approach should flash at a rate of 120 flashes per minute. Where two or more lights are needed to meet this requirement, they should be synchronised to ensure an equal time gap (to within 10%) between flashes. While landed on the helideck, a flash rate of 60 flashes per minute is acceptable. The maximum duty cycle should be no greater than 50%.
• The light system should be integrated with platform safety systems such that it is activated automatically in the event of a process upset.
• Facilities should be provided for the HLO to manually switch on the system and/or override automatic activation of the system.
• The light system should have a response time to the full intensity specified not exceeding three seconds at all times.
• Facilities should be provided for resetting the system which, in the case of NUIs, does not require a helicopter to land on the helideck.
• The system should be designed so that no single failure will prevent the system operating effectively. In the event that more than one light unit is used to meet the flash rate requirement, a reduced flash frequency of at least 60 flashes per minute is considered acceptable in the failed condition for a limited period.
• The system and its constituent components should comply with all regulations relevant to the installation.
• Where supplementary ‘repeater’ lights are employed for the purposes of achieving the ‘on deck’ 360° coverage in azimuth, these should have a minimum intensity of 16 cd and a maximum intensity of 60 cd for all angles of azimuth and elevation.

CAP 437 Chapter 4; Section 3.7
Manufacturers are reminded that the minimum intensity specification stated above is considered acceptable to meet the current operational requirements, which specify a minimum meteorological visibility of 1400 m (0.75 NM). Development of offshore approach aids which permit lower minima (e.g. differential GPS) will require a higher intensity. Revised intensities are specified for the lowest anticipated meteorological visibility of 900 m (0.5 NM) in CAA Paper 2008/01, Appendix A.
Helideck Touchdown/Positioning Marking and Heliport Identification marking (Circle-H)

CAP 437 Chapter 4; Section 3.4
In view of the obvious weaknesses of helideck floodlighting ‘solutions’, the CAA has been seeking to identify better methods for meeting the top-level requirement to provide effective visual cues for night operations, with a particular focus on finding technologies to more adequately highlight the touchdown markings.

Through research programmes initiated during the 1990s it has been demonstrated by a series of dedicated and in-service trials that effective visual cues can be provided by means of a lit TD/PM Circle and a lit heliport identification ‘H’ marking. This scheme, described in detail in paragraphs 4 and 5 of Appendix C, has clearly been demonstrated to provide the visual cues required by the pilot earlier on in the approach, and much more effectively than floodlighting and without the disadvantages associated with floodlights such as glare. The CAA believes that the new lighting scheme represents a significant safety enhancement over traditional floodlighting and is seeking every opportunity to actively encourage industry to deploy the new lighting scheme in preference to floodlighting. All operators of offshore helidecks should consider the safety benefits of upgrading their existing facilities to meet the full and final specification for an Offshore Helideck Lighting System described in CAA Paper 2012/03 and reproduced in CAP437 Appendix C.

Appendix C - Section 4; The Touchdown/Positioning Marking Circle Requirement

CAP 437 Chapter 4; Section 4.1
Configuration
The lit TD/PM circle should be superimposed on the yellow painted marking.

CAP 437 Chapter 4; Section 4.2
Mechanical Constraints
4.2.1 The height of the lit TD/PM circle and any associated cabling should be as low as possible and should not exceed 25 mm above the surface of the helideck when fitted.

CAP 437 Chapter 4; Section 4.3
Intensity
The light intensity for each of the lighting segments, when viewed at angles of azimuth over the range +80° to 80° from the normal to the longitudinal axis of the strip (see Figure 1), should be as defined in Table 3.

CAP 437 Chapter 4; Section 4.4
Colour
The colour of the TD/PM circle should be yellow, as defined in ICAO Annex 14 Volume 1 Appendix 1.

Appendix C - Section 5; The Heliport Identification Marking (‘H’) Requirement

CAP 437 Chapter 4; Section 5.1
Configuration
The lit Heliport Identification Marking should be superimposed on the 4 m x 3 m white painted ‘H’ (limb width 0.75 m).

5.1.2 An outline lit ‘H’ should comprise lighting strips of between 80 mm and 100 mm wide around the outer edge of the painted ‘H’.

CAP 437 Chapter 4; Section 5.2
Mechanical Constraints
5.2.1 The height of the lit ‘H’ and any associated cabling should be as low as possible and should not exceed 25 mm above the surface of the helideck when fitted.

CAP 437 Chapter 4; Section 5.3
Intensity
5.3.1 The intensity of the lighting strip along the 4 m edge of an outline ‘H’ over all angles of azimuth is given in Table 4 below.

CAP 437 Chapter 4; Section 5.4
Colour
The colour of the landing ‘H’ should be green, as defined in ICAO Annex 14 Volume 1 Appendix 1.

Further information can be found at the following link. CAP437 – Standards for Offshore Helicopter Landing Areas http://www.caa.co.uk/docs/33/CAP437RFS.pdf

<table>
<thead>
<tr>
<th>Elevation</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 0° to 10°</td>
<td>Min: As a function of segment length as defined in Fig. 1</td>
</tr>
<tr>
<td>&gt; 10° to 20°</td>
<td>Min: 25% of min intensity</td>
</tr>
<tr>
<td>&gt; 20° to 90°</td>
<td>Min: 5% of min intensity</td>
</tr>
</tbody>
</table>

Table 3
Light intensity for lighting segments on the TD/PM circle

<table>
<thead>
<tr>
<th>Elevation</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2° to 12°</td>
<td>Min: 3.5cd</td>
</tr>
<tr>
<td>&gt; 12° to 20°</td>
<td>Min: 0.5cd</td>
</tr>
<tr>
<td>&gt; 20° to 90°</td>
<td>Min: 0.2cd</td>
</tr>
</tbody>
</table>

Table 4
Light intensity of the 4 m edge of the ‘H’
Innovation and technology

Orga started 40 years ago as an electrical service and maintenance company working on North Sea offshore oil and gas platforms. While inspecting and servicing installed marine lanterns, foghorns, aviation obstruction lights, DC power systems and explosion-proof electrical equipment, the company developed ideas and innovative products to improve the reliability of these systems and contribute toward enhanced safety and lower operating expenses.

In 1985, Orga started manufacturing its own product range, and, since then, has continually improved its product technology by working with customers to develop systems specifically adapted to their requirements.

Delivering innovation starts with understanding our customers and their challenges. Our research and development team works in close cooperation with our marketing team, whose members understand the various markets and the specific requirements of clients, regulatory authorities and stakeholders. Together, they translate regulations and customers’ requirements into new concepts and cost effective products.

The research and development team’s expertise encompasses optics, acoustics, lamp control circuits, electromagnetic compatibility, radio frequency interference, condition data gathering and transmission, specific lightning protection, mechanical constructions, explosion-proof constructions and hardware and software development.

Our products incorporate state-of-the art technology solutions, based on the requirements of national and international regulations, safety and quality standards, that are developed to offer users high reliability with the lowest cost of ownership.

We continue to build on our track record of providing the right technology. Site surveys, maintenance, training programmes and sophisticated remote product health monitoring are all part of the services we offer. We continue to invest in research and development, and the expertise and skills of our people.

“Our products continuously improve through working in close cooperation with customers and industry organisations to develop innovative solutions.”
Quality control

Quality is an important fundamental attribute of Orga’s products and services. Our quality management focuses on not only product quality but also the means for achieving it. We constantly monitor our management, production and inspection processes to ensure fit-for-purpose products and systems, and to improve efficiency and reliability. Our quality management system uses internal audits, client feedback and management reviews to monitor how well we are achieving our quality goals.

Our clients continue to choose us over our competitors, as they trust the quality, reliability and cost effectiveness of our products and systems to help them achieve their goals and the support services we consistently deliver.

Our quality assurance system is accredited to ISO 9001:2008 by the Dutch certification body DEKRA.

DEKRA has also certified Orga for the production of explosion-proof electrical equipment in accordance with ATEX Directive 94/9/EC and European Standard EN13980. This authorises us to manufacture equipment and protective systems components for use in potentially explosive atmospheres.

“We products differentiate us from our competitors in terms of quality, design and service life, availability and sustainability.”

We value the input from our clients and welcome your feedback; therefore we would like to ask you to fill in our feedback form (available on our website).
Orga’s service department provides the following services:

- commissioning,
- troubleshooting,
- inspection and survey,
- renovation,
- maintenance,
- training and consultancy services.

To ensure proper installation of specific products, we offer installation supervision and commissioning services for navaid systems, helideck lighting equipment, obstruction lights, utility uninterruptible power systems, photovoltaic (solar) panels, chargers and battery systems.

Orga Offshore actively promotes installed base inspection management systems and advises its customers to inspect product systems regularly to ensure a more proactive inspection and maintenance approach. This after-sales service for lanterns, foghorns, perimeter lights, obstruction lights and related products includes inspection visits, reporting on the status of installed products, and advice to the customer on near-future maintenance, the expected life time of products and options to update to newer technology.

Our service team operates from our main facilities in The Netherlands, and from our office in Malaysia. It offers on-site but also in-house repair services. A 24/7 service is available for immediate support. In addition, Orga works in close cooperation with key partners around the world to provide a locally based fast first-line support to its customers and product end-users. Troubleshooting service on site is generally offered within 24 to 48 hours, depending on the location. Each inspection or maintenance visit comes with a full inspection report.

One-day training workshops for customer personnel can be organised at the client’s offices, at our head-office, but also on-site. These workshops are tailored to specific needs of the customer. Training groups are generally small with maximum of 10 people. In addition to the above mentioned product services, Orga’s service department also carries out field research for the R&D department to support technology improvements.

Our service engineers have extensive international experience. They work safely and efficiently – all have safety, medical and emergency certificates, including the Basic Elements of Safety (VCA/SCC) certificate and approved basic OLE, NOGEPA and OPITO certificates. In addition, they have specific application, working at height, product and culture know-how which ensures a responsive and high-quality service. Our service engineers are dedicated, enthusiastic, friendly and always willing to go that extra mile.
For further information contact our head office

www.orga-offshore.nl
www.circle-h.nl