Aviation Lighting

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Incoherent Light Sources
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Agenda

- Lighting on the Aircraft
  - Position lights on an Aircraft
  - Interior lighting
- Lighting on the Helicopter
- Heliport Lighting
- Airport Structure
- Runway Navigational Lights
- VASI and PAPI
- Types of Lamps in Airfield lighting
- Obstruction Lights
- Wind turbines
Lighting on the Aircraft
Position lights on an Aircraft

- The left and right position lights are located on the outer wing ends.
- The white light is located at the rear.
- The intensity of the position and strobe lights penetrates clouds and fog.
Interior lighting

Emergency
- green "Exit" signs
- If the main lighting is a simple lighting and lighting of the corridors by small lamps in the seat frames available
- With total loss of light -> in the carpet incorporated fluorescent strips show the way to the exits / emergency exits

Signs
- "Seat Belts" and "No Smoking" signs
- the most light only during takeoff and landing
- The Pilot switch it on/out

Cabin lighting
- To illuminate the passenger compartment of the cockpit and cargo space are also LED´s in use
- Older Models use Fluorescent tubes
- For cabin lighting are small Hallogen spots are used
Lighting on the Helicopter
Heliport Lighting

- Heliports that are approved for operation in the night have a night marking by firing.
- Besides a floodlit usually also the boundary of the landing area is marked by green rimfire.
- When a final approach and take-off area designated whose boundary is fired white.
- To display a preferred approach direction are arranged in a line white approach lights can be attached.
- To give the pilot information about the angle of approach VASI or PAPI are possible.
Runway Navigational Lights

- Start and runways are fired at the edges with white lights from the holding point to runway center line green light.
- Intermediate holding positions are fired orange.
- The center line lighting is up to 900m in front of white tail, then alternating red and white and red on the last 300m.
- Non-precision approaches are equipped with at least a 720m long approach lighting.
  - Exceptions up to 420m are possible.
Runway Navigational Lights

- All taxiways are fired with green lights
  - edges are blue
- The apron has blue lights and headlights
- At the two ends of the runway are the runway end lights in red
VASI and PAPI

VASI

- Visual Approach Slope Indicator
- is an optical system, which supports the pilots in complying with the glide path on approach to a runway and simplified approaches at night

PAPI

- Precision Approach Path Indicator
- zu deutsch "Präzisions-Anflug Gleitwinkelbefeuerung"
- is another form of VASI
- There is only one unit that includes four lights
- Difference to VASI: These lights are located next to each other
Types of Lamps in Airfield lighting

Halogen lamps

- Light sources for this application need to be highly reliable and durable and have relatively low installation costs.
- They provide instant and constant light output and have a life of up to 6000 hours.
- The light is flicker-free and dimmable and provides first-class performance even in adverse weather conditions such as snow and fog.
- The wattages range from 30 to 200W with or without a reflector.

IRC-Lamps

- Halogen lamps produce more than just visible light.
- 60% of the radiated energy is unused infrared radiation.
- The IR coating makes use of this. It reflects the majority of the infrared radiation back to the filament.
- Less energy has to be supplied from outside to bring the filament up to its operating temperature.
- The result is greater luminous efficacy, lower power consumption and longer life. (2X than standard halogen lamps.)
Types of Lamps in Airfield lighting

LED’s

- Best energy efficiency, safety, security and maintenance costs
- They reduce the energy consumption of airfield lighting thanks to their long life and excellent reliability
- The light sources are thoroughly tested to meet the strict standards required of airfield lighting

-> most common use Lamp Type in the avionic today

Eg.: Zelion H from Osram
Obstruction Lights (OBSL)

Today only LED
- Former days: Gas discharge lamps or flashlights

Low Intensity Obstacle Light
- Most common is Low intensity Type A
  - Typ B, Red is stronger

10 Candela

Red

Used as Nightfire
Wind turbines

- Special Obstruction
- Red Light Typ „W“
- Intensity of 170Cd
- Blink code: 1 s on – 0,5 s out – 1 s on – 1,5 s out
- Alternatively it’s possible to make the Light on the Top of the Wings
  - This is more Efford
  - The Neighborhood don´t like this
Thanks for your Attention!