



Airfield Ground Lighting Operation and Maintenance Training Course

Ref: #AIR2003



Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of Airfield Ground Lighting (AGL) systems, which are critical for ensuring the safety and efficiency of airport operations under all visibility conditions. The program is meticulously designed to cover everything from fundamental principles to advanced maintenance and troubleshooting techniques, aligning with the highest international standards set by ICAO and the FAA. As emphasized by pioneers in airport engineering like Robert Horonjeff in works such as "Planning and Design of Airports," the reliability of airfield infrastructure is paramount. This course delves into the practical application of these principles, focusing on the operational integrity of runway, taxiway, and approach lighting systems. Participants will gain a robust understanding of constant current regulators, control systems, and safety protocols. BIG BEN Training Center has developed this curriculum to empower aviation professionals with the specialized knowledge required to manage, maintain, and ensure the compliance of modern AGL systems, directly contributing to enhanced aerodrome safety and operational continuity. This training is an essential investment for any professional dedicated to excellence in airport infrastructure management.

Target Audience / This training course is suitable for:



- Airport electricians and technicians.
- Airfield maintenance engineers and supervisors.
- Airport operations managers.
- Civil aviation authority inspectors and regulators.
- Airport project managers and consultants.
- Airfield systems design engineers.
- Technical staff from military airbases.
- Airport safety and compliance officers.

Target Sectors and Industries:

- Civil Aviation and Airport Authorities.
- Airport Management and Operations Companies.
- Military and Defense Aviation Sectors.
- Aviation Consulting and Engineering Firms.
- Governmental regulatory bodies and transport ministries.
- Construction companies specializing in airport infrastructure.

Target Organizations Departments:

- Airfield Maintenance and Engineering.
- Airport Operations and Airside Management.
- Technical Services and Infrastructure.
- Safety, Quality, and Compliance.
- Projects and Development.
- Facilities Management.
- Electrical Engineering Departments.

Course Offerings:



By the end of this course, the participants will have able to:

- Identify all components of a modern Airfield Ground Lighting system.
- Understand the principles of series circuits and constant current regulators (CCRs).
- Perform routine maintenance on runway, taxiway, and approach lighting fixtures.
- Implement effective troubleshooting procedures to diagnose and resolve AGL system faults.
- Apply international safety standards, including lockout/tagout procedures, during maintenance.
- Interpret AGL system schematics and technical documentation accurately.
- Conduct regulatory compliance checks according to ICAO Annex 14 and FAA advisories.
- Evaluate the benefits and challenges of upgrading to LED airfield lighting technology.
- Manage AGL maintenance schedules to minimize operational disruptions.
- Operate and monitor Airfield Lighting Control and Monitoring Systems (ALCMS).

Course Methodology:



The training methodology at BIG BEN Training Center is designed to be highly interactive, practical, and engaging to ensure maximum knowledge retention and skill development. This course moves beyond traditional lectures by integrating a blended learning approach. Theoretical sessions will establish a strong foundation in AGL principles, regulations, and system design, supported by detailed presentations and technical manuals. These sessions are complemented by in-depth case studies of real-world AGL failures and successful maintenance interventions, fostering critical thinking and problem-solving skills. Group discussions and interactive workshops will encourage participants to share experiences and collaborate on troubleshooting scenarios. A significant portion of the course is dedicated to simulated practical exercises where participants can apply learned techniques in a controlled and safe environment. Our expert instructors provide continuous guidance and personalized feedback, ensuring that each participant can confidently translate theoretical knowledge into practical competence upon returning to their workplace. The focus is on building hands-on skills and a deep understanding of AGL systems.

Course Agenda (Course Units):

Unit One Fundamentals of Airfield Ground Lighting (AGL)



- Introduction to AGL and its role in airport safety.
- Overview of international standards (ICAO Annex 14) and FAA regulations.
- Types of airfield lighting systems (approach, runway, taxiway).
- Understanding AGL terminology and acronyms.
- Components of an AGL circuit.
- Principles of photometry and colorimetry in aviation.
- Safety precautions for working with AGL systems.

Unit Two AGL Circuits and Power Systems

- Principles of series circuits and their application in AGL.
- In-depth study of Constant Current Regulators (CCRs).
- Types of AGL transformers and their functions.
- Primary and secondary circuit design and characteristics.
- Cable types, specifications, and installation methods.
- Earthling and insulation resistance testing procedures.
- Understanding Airfield Lighting Control and Monitoring Systems (ALCMS).

Unit Three Maintenance of AGL Fixtures and Equipment

- Maintenance procedures for elevated and inset lighting fixtures.
- Cleaning, relamping, and alignment of lights.
- Maintenance of Precision Approach Path Indicator (PAPI) systems.
- Servicing runway and taxiway guidance signs.
- Inspecting and maintaining connecting cables and transformers.
- Preventive maintenance scheduling and best practices.
- Tools and test equipment for AGL maintenance.

Unit Four Troubleshooting and Fault Diagnosis



- Systematic approaches to AGL fault finding.
- Common faults in AGL circuits and their causes.
- Using multimeters and insulation testers for diagnosis.
- Troubleshooting CCRs and control systems.
- Identifying and rectifying open-circuit and short-circuit faults.
- Case studies of complex AGL system failures.
- Developing a logical troubleshooting methodology.

Unit Five AGL Inspection, Compliance, and Modern Technologies

- Conducting periodic and annual AGL system inspections.
- Documentation, record-keeping, and maintenance logs.
- Preparing for regulatory audits and inspections.
- Introduction to LED technology in airfield lighting.
- Challenges and strategies for migrating from halogen to LED systems.
- Future trends in AGL, including smart lighting and predictive maintenance.
- Course review, final assessment, and open discussion forum.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:



As airports increasingly adopt "Follow the Greens" guidance systems and other smart technologies, how will the maintenance priorities and skill requirements for AGL technicians shift from reactive repair to proactive system management and data analysis?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by offering a holistic and deeply practical curriculum that bridges the gap between theoretical knowledge and real-world application. Unlike programs that focus solely on regulations or specific equipment, this training integrates the operational "why" with the technical "how." It provides a comprehensive understanding of both ICAO and FAA standards, making the skills acquired universally applicable across international airports. The curriculum is built around a problem-solving ethos, utilizing extensive case studies of actual AGL system failures to teach advanced troubleshooting and diagnostic skills that go beyond standard manual procedures. Furthermore, the course content is forward-looking, addressing the critical transition to LED technology and the future of smart airfield lighting systems. The emphasis on interactive sessions and simulated practical exercises ensures that participants do not just learn but also practice and master the skills needed to maintain these mission-critical systems, ensuring maximum operational safety and efficiency at their home aerodromes.