Aviation Fuel Handling, Safety, and Quality Control Training Course



16 - 20 Nov 2026

Cape town

4600 € (Per Person)

Ref: #AVI1416_268187

Course Introduction / Overview:

The integrity of aviation fuel is a critical pillar of flight safety, where a minor oversight in handling or quality can have catastrophic consequences. This comprehensive course provides an in-depth exploration of the entire aviation fuel supply chain, from refinery to aircraft, focusing on the stringent standards that govern its handling, safety, and quality control. Grounded in the principles outlined by leading industry bodies and publications like the "Handbook of Aviation Fuel Properties," this program delves into the technical specifications, testing protocols, and operational best practices essential for ensuring clean, dry, on-spec fuel. Participants will gain a robust understanding of contamination prevention, risk mitigation, and regulatory compliance. BIG BEN Training Center has designed this curriculum to move beyond theoretical knowledge, emphasizing the practical application of standards such as those developed by JIG (Joint Inspection Group) and IATA. The course integrates insights from experts in the field, ensuring that the content is current, relevant, and directly applicable to the challenges faced by professionals in maintaining the highest levels of aviation fuel integrity and operational safety.

Target Audience / This training course is suitable for:

- Aviation Fuel Farm Operators and Supervisors.
- Aircraft Refueling Technicians and Agents.
- Quality Control and Laboratory Personnel.
- Airport Operations and Safety Managers.
- Airline Maintenance and Engineering Staff.
- Health, Safety, and Environment (HSE) Officers.
- Regulatory Compliance and Auditing Professionals.
- Logistics and Supply Chain Managers for petroleum products.
- Military personnel involved in aviation fuel logistics.

Target Sectors and Industries:

- Commercial and Cargo Airlines.
- Airport Authorities and Ground Handling Agencies.
- Fixed-Base Operators (FBOs) and Into-Plane Fueling Companies.
- Oil and Gas Companies involved in jet fuel production and distribution.
- Military Aviation and Defense Contractors.
- Maintenance, Repair, and Overhaul (MRO) Organizations.
- Governmental bodies and Civil Aviation Authorities.
- Petrochemical and Fuel Testing Laboratories.

Target Organizations Departments:

- Operations and Ground Services.
- Quality Assurance and Quality Control (QA/QC).
- Health, Safety, and Environment (HSE).
- Maintenance and Engineering.
- Logistics and Supply Chain Management.
- Technical Services and Support.
- Compliance and Regulatory Affairs.
- Training and Development.

Course Offerings:

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

- Identify the properties and specifications of various aviation fuels like Jet A-1 and Avgas.
- Implement rigorous quality control procedures in line with JIG and API/EI standards.
- Conduct precise fuel sampling and testing for contaminants such as water and particulates.
- Manage aviation fuel storage facilities to prevent degradation and contamination.
- Execute safe and efficient aircraft refueling and defueling operations.
- Develop and implement effective emergency response plans for fuel spills and incidents.
- Audit fuel handling processes to ensure full compliance with international regulations.
- Understand the impact of human factors on aviation fuel handling safety.
- Integrate Safety Management System (SMS) principles into daily fueling operations.

Course Methodology:

The training methodology at BIG BEN Training Center is centered on creating an immersive and practical learning environment that bridges theory with real-world application. This course utilizes a blended approach, combining expert-led instructional sessions with highly interactive modules. Participants will engage in detailed case study analyses of significant aviation fuel-related incidents, deconstructing the root causes and exploring preventative strategies. Group workshops and collaborative problem-solving activities will be used to tackle complex scenarios in fuel quality management and emergency response, fostering teamwork and critical thinking. The curriculum incorporates visual aids, process flow diagrams, and simulated demonstrations of key procedures such as fuel sampling and equipment inspection. A significant emphasis is placed on open discussion and knowledge sharing, allowing participants to learn from the diverse experiences of their peers and the instructor. Feedback is continuous and constructive, ensuring that participants can confidently apply the learned skills and safety protocols in their operational roles, thereby enhancing safety and efficiency within their organizations.

Course Agenda (Course Units):

Unit One: Fundamentals of Aviation Fuels and Global Standards

- Introduction to Aviation Fuel Types (Jet A-1, Jet A, Avgas).
- Key Physical and Chemical Properties of Jet Fuel.
- Understanding International Fuel Specifications (ASTM D1655, DEF STAN 91-091).
- The Aviation Fuel Supply Chain from Refinery to Aircraft.
- Introduction to Key Regulatory Bodies (IATA, JIG, A4A, API).
- The Critical Role of Documentation and Record-Keeping.
- Fundamentals of Fuel Contamination and Its Impact on Aircraft.

Unit Two: Aviation Fuel Quality Control and Testing

- Principles of Fuel Quality Assurance.
- Proper Techniques for Aviation Fuel Sampling.
- Visual Inspection and Clear and Bright Testing.
- Field and Laboratory Testing Methods for Contaminants.
- Detecting and Managing Water Contamination.
- Controlling Particulate and Microbial Contamination.
- Understanding and Using Fuel Test Equipment.
- Interpreting Test Results and Taking Corrective Actions.

Unit Three: Safe Fuel Receipt, Storage, and Handling

- Best Practices for Receiving Fuel into Airport Storage.
- Design and Operation of Fuel Storage Tanks and Farms.
- Filtration Systems and Coalescer Technology.
- Procedures for Tank Draining and Cleaning.
- Managing Electrostatic Hazards during Fuel Transfer.
- Product Segregation and Prevention of Cross-Contamination.
- Pipeline and Hydrant System Integrity Management.

Unit Four: Aircraft Refueling Operations and Safety

- Operating Principles of Refueler Trucks and Hydrant Dispensers.
- Standard Into-Plane Refueling and Defueling Procedures.
- Bonding, Grounding, and Fire Safety Protocols.
- Communication Procedures with Flight and Ground Crew.
- Managing Fuel Spills and Environmental Protection.
- Emergency Response Procedures for Fuel-Related Incidents.
- Human Factors in Aircraft Refueling Operations.

Unit Five: Advanced Topics, Auditing, and Future Fuels

- Implementing a Fuel Safety Management System (SMS).
- Conducting Internal and External Fuel Facility Audits.
- Principles of Risk Assessment in Fuel Handling.
- Introduction to Sustainable Aviation Fuels (SAF) and their Handling.
- Managing Additives like Fuel System Icing Inhibitor (FSII).
- Regulatory Compliance and Inspection Preparedness.
- Course Review, Assessment, and Action Planning.

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:

With the increasing adoption of Sustainable Aviation Fuels (SAF), how must traditional quality control and handling protocols evolve to manage the unique challenges posed by blended fuel stocks?

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

This course distinguishes itself through its holistic and integrated approach to aviation fuel management, viewing the process as a single, unbroken chain of custody from production to the point of delivery. Unlike programs that may focus narrowly on specific operational tasks, this curriculum emphasizes the interconnectedness of quality control, safe handling, and regulatory compliance. It places a significant focus on proactive risk management and the practical application of a Safety Management System (SMS) within the fueling environment, a critical aspect often overlooked in standard technical training. Furthermore, the course content is deeply rooted in the analysis of real-world incidents and case studies, providing participants with invaluable lessons in preventative safety. By integrating discussions on human factors and preparing professionals for the future of aviation with modules on Sustainable Aviation Fuels (SAF), the course provides not just a certification of skills, but a comprehensive mindset geared towards upholding the highest standards of safety, quality, and operational excellence in the dynamic aviation industry.