EI 1550

Handbook on equipment used for the maintenance and delivery of clean aviation fuel

2nd edition
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EI 1550

HANDBOOK ON EQUIPMENT USED FOR THE MAINTENANCE AND DELIVERY OF CLEAN AVIATION FUEL

Second Edition
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This second edition of this publication was prepared on behalf of the EI Aviation Committee by Phil Rugen (Shell Global Solutions), Martin Hunnybun (EI) and Paul Wells (ExxonMobil Research & Engineering), with contributions from members of the EI’s Aviation Fuel Filtration Committee and filter manufacturer representatives.

This publication describes how to maintain aviation fuel cleanliness from the point of fuel certification to into-plane delivery. It has been prepared in order to communicate key information on the application and use of aviation fuel filtration systems. This includes operational experiences from users, findings from industry research and explanations of laboratory qualification test requirements included in EI filter specifications.

This second edition provides four new chapters, covering:

• de-rating filter monitor vessels with blank/dummy elements and filter/water separators (FWSs) with blinds/caps;
• filtration system installations (fixed facilities);
• differential pressure: its measurement, monitoring and correction, and
• Management of Change.

In addition, significant updates have been included to the chapters covering:

• similarity for filter/water separators (to reflect EI 1582 2nd edition);
• microfilters (to reflect EI 1590 3rd edition);
• filter vessels (to reflect EI 1596 2nd edition), and
• recommendations for operation of filter vessels.

Other amendments have been made throughout the document to ensure that the information provided remains up to date and continues to reflect good practice. That this publication provides good practice recommendations for industry adoption has been recognised by its inclusion as a reference in ICAO Doc. 9977 Manual on civil aviation jet fuel supply.

This publication is intended for a wide range of industry practitioners including those who design aviation fuel handling systems, specify and/or purchase equipment/components for use in such systems, manufacturers and users of equipment/components, operators of pipelines, operators of terminals (intermediate and pre-airport) and those who own or operate aviation fuel supply facilities at airports.

Reference has been made throughout this document to the requirements of operating standards, such as ATA 103, JIG 1 and JIG 2. Readers should be aware of other operating standards that may also be followed, and recognised by ICAO Doc. 9977.
This publication should not be considered as a replacement for the recommendations of aviation fuel filter manufacturers, which should be followed. Neither does it absolve the manufacturers of such components of the responsibility to clearly communicate to users of their products, their correct operation and any application/operational limitations that may exist.

This publication also addresses key aspects of operational requirements for filtration systems. It is assumed that all users of this publication are either fully trained or under the supervision of a responsible trained person who is familiar with all normal engineering safety practice, and that all such precautions are observed. Users of this publication are responsible for ensuring compliance with the requirements of locally prevailing health and safety regulations.

This publication uses the Systemé International d’Unités (International System of Units, or SI), with the exception of pressure which is given in psi. In this system, the decimal point is a comma (,). In writing numbers of greater than three digits, thousands are demarcated by the use of a space, rather than a comma. US Customary Units are also given in parentheses after the SI unit.

Suggested revisions are invited and should be submitted to the Technical Department, Energy Institute, 61 New Cavendish Street, London, W1G 7AR, e: technical@energyinst.org.

They can also be submitted via www.energyinst.org.uk/filtration. Information regarding amendments/updates to this publication will also be posted at that site, to which readers are referred.
The principal contributors to the drafting of EI 1550 second edition have been Phil Rugen (Shell Global Solutions), Martin Hunnybun (EI) and Paul Wells (ExxonMobil Research & Engineering). The text has been reviewed by the following members of the EI Aviation Fuel Filtration Committee. All are thanked sincerely for their assistance.

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Coordination and editing was undertaken by Martin Hunnybun, EI.

1 www.acephotography.gr
Chapter 1

Introduction

This chapter explains for whom this publication is intended, what 1550 does and does not cover, and why the EI has produced it.

Who is 1550 for?

This publication provides information for:

- Designers of aviation fuel handling systems (including aviation filtration systems and other fuel cleanliness monitoring/control equipment).
- Those responsible for specifying and purchasing equipment/components for use in aviation fuel handling systems.
- Manufacturers of equipment/components (including vehicles) typically used in aviation fuel handling systems.
- Pipeline operators.
- Pre-airport/pre-airfield and intermediate depot/terminal operators.
- Operators of aviation fuel supply facilities at airports/airfields.
- Equipment/component operators/users.
- Those responsible for purchasing aviation fuel.
- Those who have read EI/JIG 1530 or EI 1560 and would like more information on fuel cleanliness.
- Other standards developing organisations that may wish to reference EI or EI equipment/component specifications.

What does 1550 cover?

This publication provides information on:

- Maintaining aviation fuel cleanliness from batch release/point of fuel certification to into-plane delivery for civilian (mainly commercial) applications.
- The design, installation and operation of filtration/water removal equipment used in aviation fuel handling systems to ensure fuel cleanliness.
- Operational characteristics of different system components as applied in the aviation fuel handling system. This includes discussion of known limitations in the use of particular types of components.
- Key issues to be considered in the selection and use of combinations of various technologies/quality assurance procedures to achieve the required fuel cleanliness.
- Other standards or publications that should be consulted for additional in-depth information.
Introduction

Why the need for 1550?

This publication has been prepared to:

• Communicate key information on the above topics to assist all those listed above.
• Provide information based on operational experiences that may benefit the industry and provide specific references to other publications where appropriate.
• Disseminate key findings from relevant industry research to users of equipment/component who may not be directly involved in all research activities.
• Provide information that may assist in the optimisation of aviation fuel handling system components in terms of safety and efficiency.
• Highlight the benefits of using combinations of components.
• Incorporate developments in good practice and EI specifications that have occurred since the publication of the first edition of EI 1550 in 2007.

What 1550 does not cover

• 1550 does not specifically address military applications. However, much of the information may be applicable.
• 1550 has been written by technical specialists involved primarily in the supply of jet fuel to commercial aircraft. The information may therefore have limited application to maintaining cleanliness of aviation gasoline fuels (which may form a large part of the ‘general aviation’ market), to very small airfield installations, or those on-board ships or on offshore platforms. It is hoped that a future edition of 1550 will cover some of the more specific requirements for those applications. (Note some aviation gasoline points are included in Chapter 3 Fuel cleanliness and Chapter 16 Application of filtration components in aviation fuel handling systems.)
• 1550 should not be considered an operations manual. All operators of aviation fuel handling systems and equipment/components should have their own detailed operating procedures.
• 1550 does not include detailed information or operational recommendations from equipment/component manufacturers. Such information should always be provided by manufacturers, and followed by users.
• 1550 does not provide general fuel handling design and operational recommendations that do not specifically relate to fuel cleanliness, see ‘Where can I find further information?’
• 1550 does not provide specific information on cleanliness control at refineries. For further information see EI/JIG 1530.
• 1550 does not provide information on electronic sensors for particulate matter/free water detection during aircraft refuelling. Information on that topic is provided in EI 1570.

Where can I find further information?

If what you are looking for is not outlined here, you might not find it in 1550. Other sources of related information are included in Annex Q (see also inside back cover).