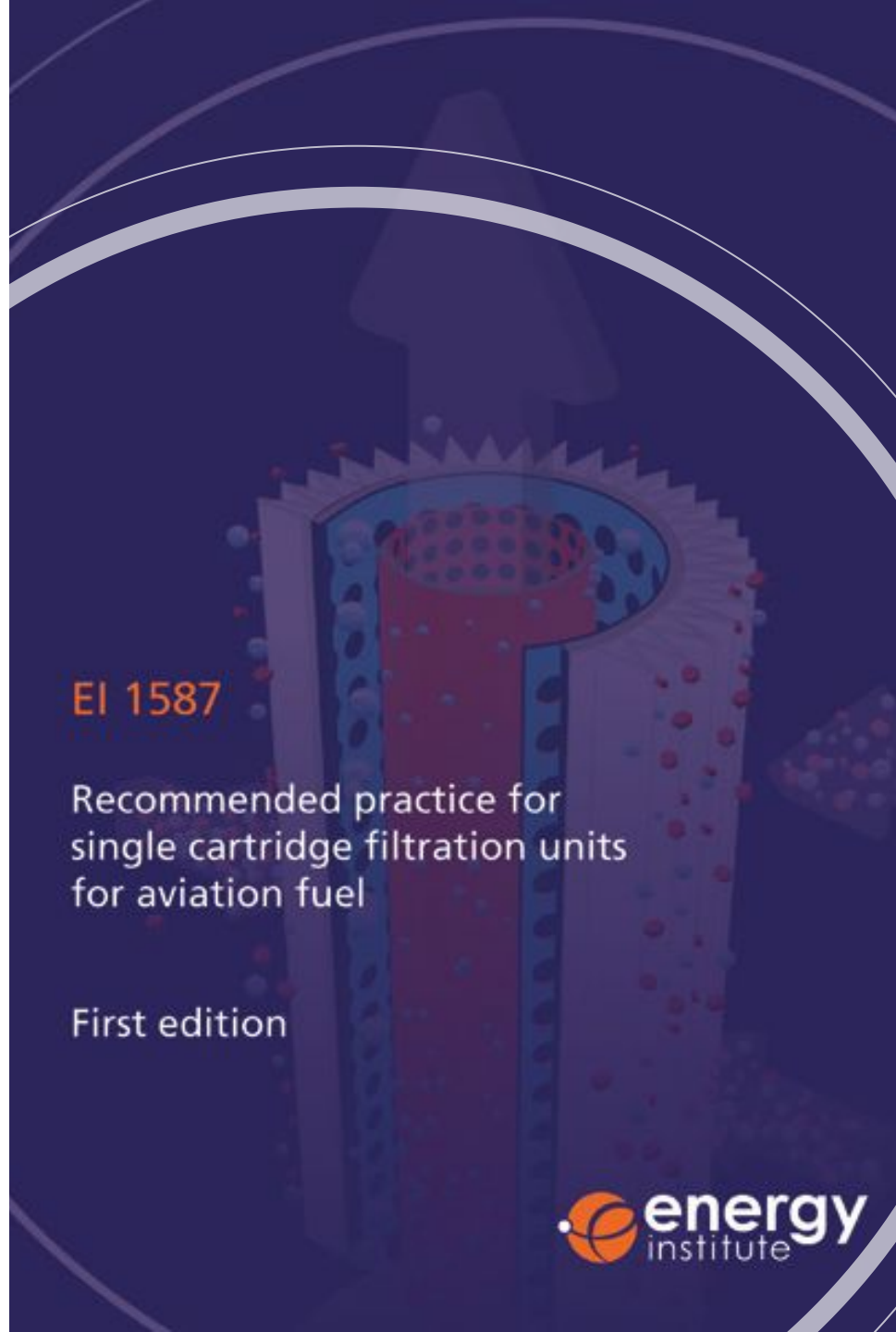


EI 1587: Single Cartridge Filtration Units

Phil Rugen
on behalf of the EI

19 February 2025



EI 1587

Recommended practice for
single cartridge filtration units
for aviation fuel

First edition

The challenge



Example of fuel sample containing dirt



Example of dispersed water haze in fuel



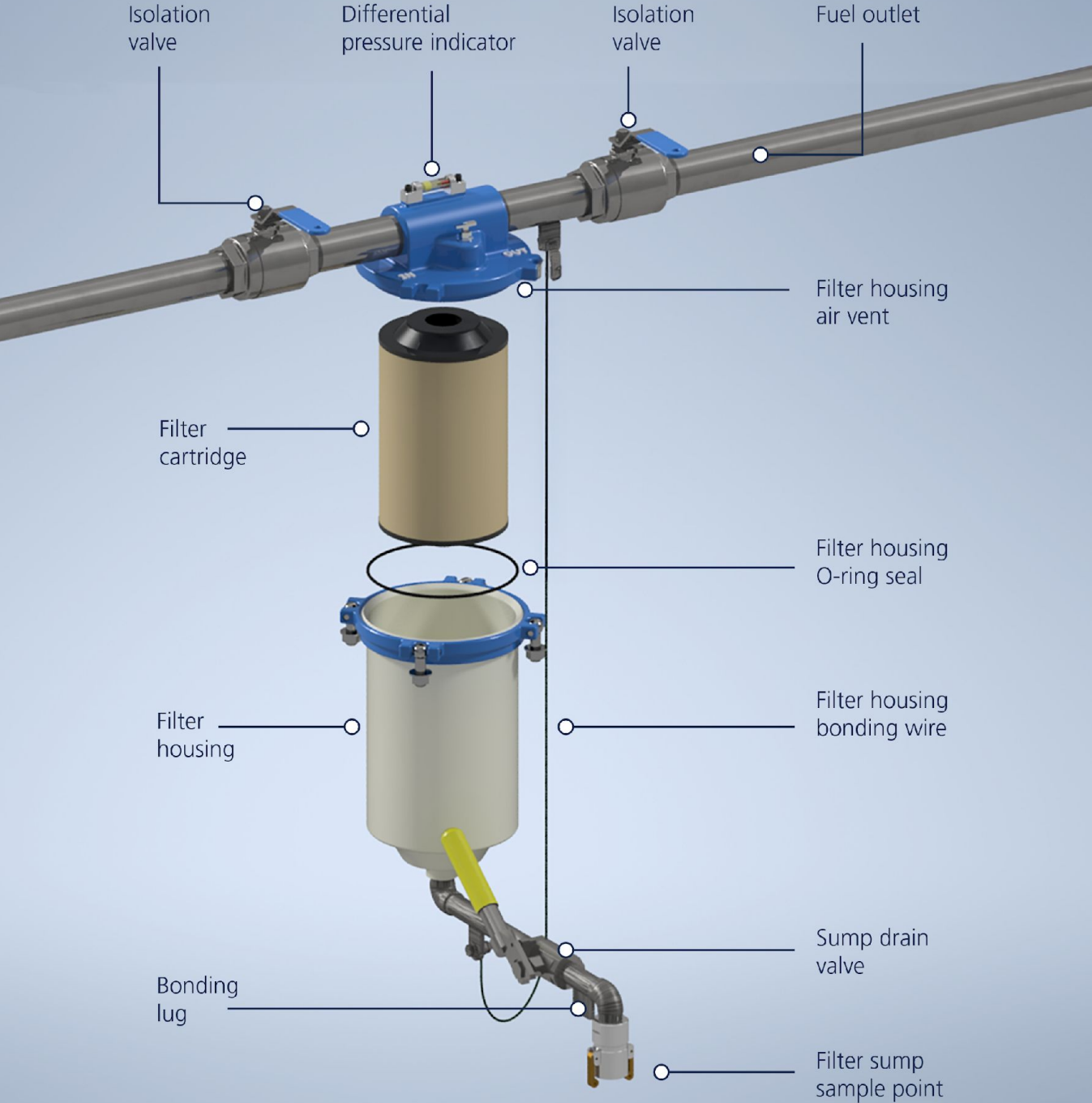
Example of bulk water contamination

'It is critical that all aviation fuel delivered to aircraft is clean and dry, to help ensure the safety and efficiency of flight operations.'

The solution – single cartridge housings



Terminology



Introducing EI 1587

Filter qualifications
(EI witnessed)



1581/82
Filter/water
separators

1588
Water barrier
filters

1590
Microfilters

1599
Dirt defence
filters



Multiple cartridges

EI 1596

Design and
construction of
multi-cartridge filter
vessels

3rd edition
August 2017

High pressure/
flowrate applications

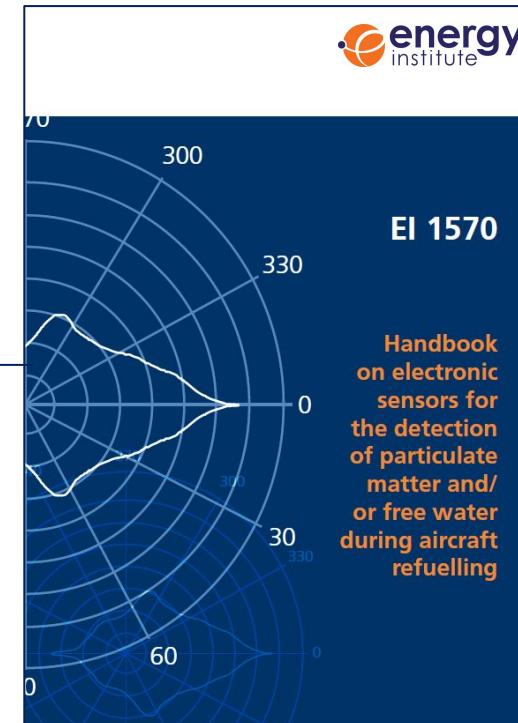
- Historically, API and EI filter qualification specifications have primarily focussed on high pressure/high flowrate applications



EI 1550

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

Third edition



EI 1587

Each specification updated to include options for low pressure applications



Filter qualifications
(EI witnessed)



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One cartridge

Multiple cartridges

EI 1587

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cartridge filtration
units for aviation fuel

**1st edition
2025**



**Low pressure/
flowrate applications**

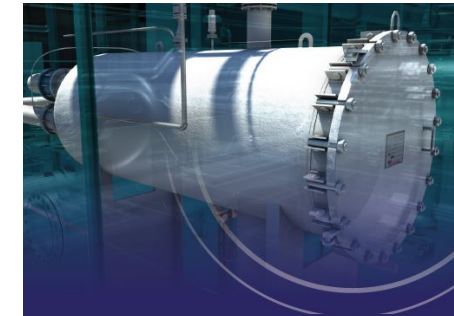
EI 1596

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**3rd edition
August 2017**



**High pressure/
flowrate applications**



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aviation fuel

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EI 1587 content includes

- Annex A - Specification for single cartridge housings vessel & accessories
- Recommendations to ensure operation of filter remains within qualified performance envelope – flow rates, fuel types, differential pressure etc



Introducing EI 1587

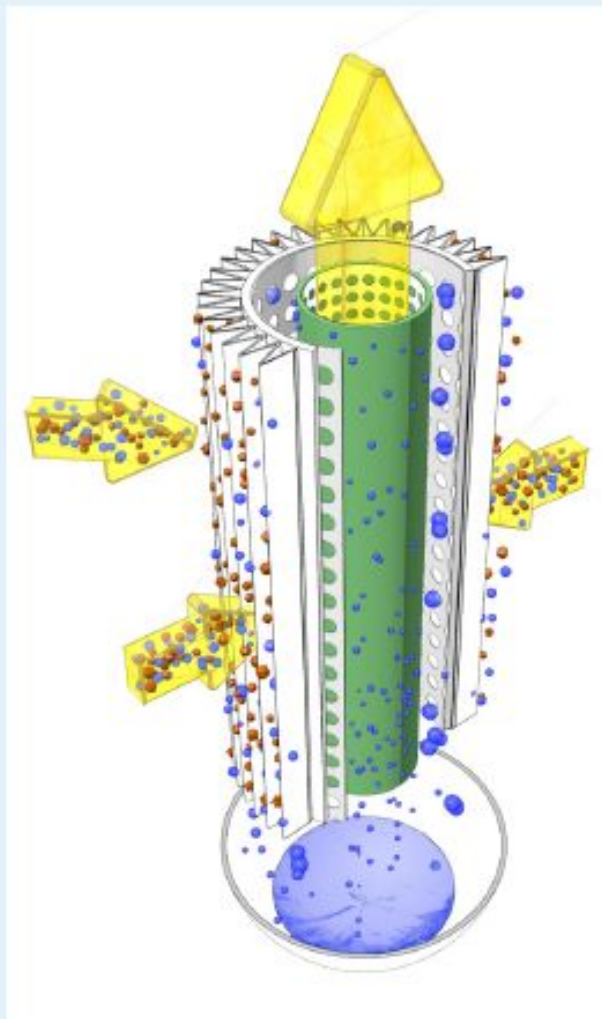
- **Description of four filter technology types**
- **Recommendations for equipment selection/managing risk of fuel cleanliness**
- **Filtration unit installations**
- **Key concepts for their use/recommendations for operation**
- **Specification for single cartridge housing (Annex A)**
- **Discontinue the use of filter monitors**



EI 1587

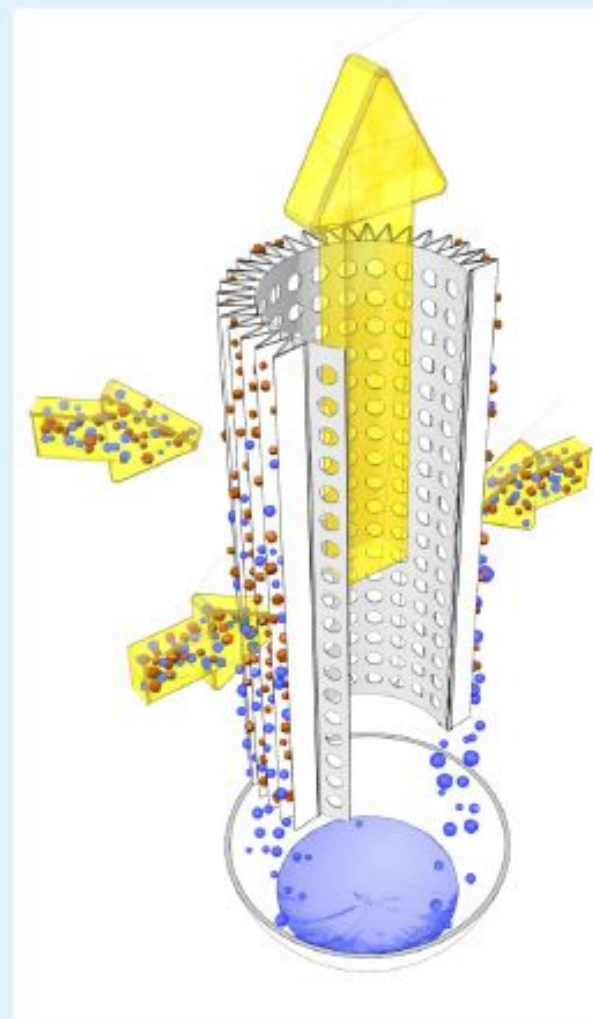
Recommended practice for
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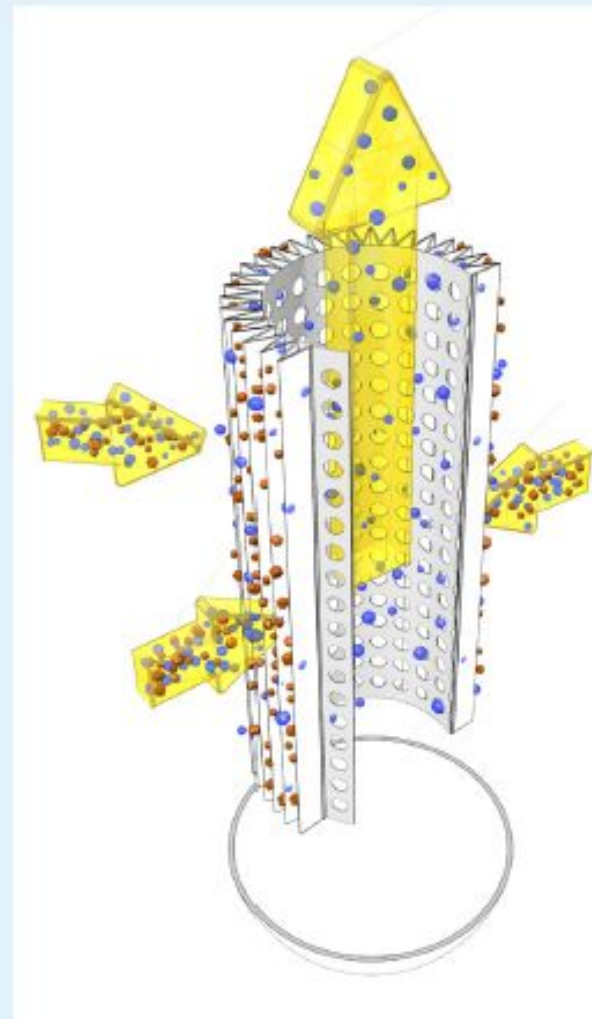
Coalescer/separator cartridge

Representation of a coalescer/separator showing both dirt and water being prevented from passing downstream, and water collecting in the sump from where it has to be drained.



Water barrier filter cartridge

Representation of a water barrier filter showing both dirt and water being prevented from passing downstream, and water collecting in the sump from where it has to be drained.



Microfilter cartridge or dirt defence filter cartridge

Representation of a microfilter or dirt defence filter in which only dirt is prevented from passing downstream, free water in the fuel passing through the cartridge.

What is the fuel type?

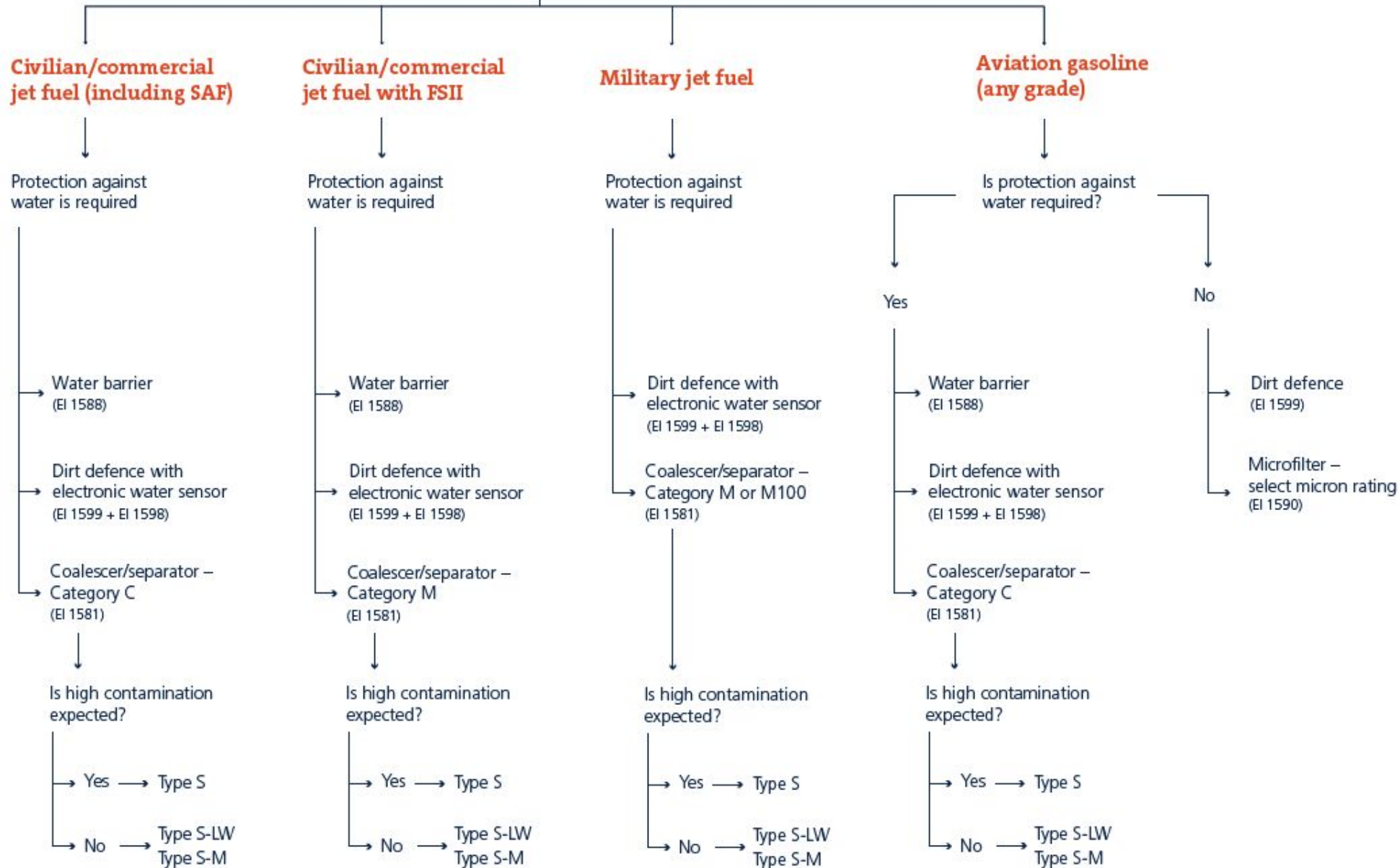


Figure 5: Cartridge technology decision tree

Differential pressure

- Difference in pressure on the upstream/inlet and downstream/outlet sides of a filter housing
- Measure/monitor over time
- Ensure cartridge is not exposed to conditions outside of those during qualification testing (changeout DP)

'The importance of DP cannot be overstated. It is the primary means by which a filtration unit alerts an operator to fuel contamination (by dirt and/or free water) or the failure of a cartridge.'



Figure 6: Example of piston-type gauge with quantitative scale for low flow rate/low pressure applications



Figure 7: Examples of visual indicator differential pressure gauges

Some key recommendations

*'(EI 1587 Annex A)
filter housings are
designed to contain
one single-use,
replaceable filter
cartridge.'*

*'...there is no such
thing as a 'fit and
forget' filter – every
type of filter requires
monitoring in
service.'*

*'Never use a single
cartridge filtration
unit without a filter
cartridge installed
in it.'*

*'...the aviation
industry is
transitioning away
from the use of filter
monitor cartridges...'*

Some key recommendations

'At locations that have both jet fuel and aviation gasoline, ensure that the filtration unit is dedicated to one fuel (product) type only.'

'If there is no fuel flow during a fuelling operation, it could mean that the housing is full of water...'

'...housing sumps should be drained daily (when the equipment is in use) at system pressure...'

'Microfilters...are not permitted for fuelling aircraft with jet fuel.'


Remember this one



'The importance of DP cannot be overstated. It is the primary means by which a filtration unit alerts an operator to fuel contamination (by dirt and/or free water) or the failure of a cartridge.'

Please use EI 1587

- Use of qualified cartridges helps manage risk
- Recommendations are based on operating experience
- Recommendations can be used for training of fuelling staff
- Please provide feedback to help us improve this industry resource
- PDF available as a free download from EI publishing website



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
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registered
charity, which
exists to
develop and
disseminate
knowledge,
skills and good
practice**

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