

SUMMARY

JIG, A4A and IATA (the field trial joint industry group) remain committed to the technical evaluation of new technologies for the replacement of Filter Monitors (FM). This update includes the latest information from the Joint Industry Filtration Field Trials as well as the status of new technologies intended to support the replacement of FM in aviation fuelling operations.

In addition, we are providing a clarification to the Bulletin 132 expectations of Management of Change (MoCs) and Transition plans for replacing FMs, as well as a link to the Dirt Defence Filter + Electronic Water Sensor (DDF+EWS) Failure Modes and Effects Analysis (FMEA) study recommendations and generic vehicle design used for the study.

1. FILTRATION FIELD TRIALS – PARKER VELCON CDFX WATER BARRIER FILTER 2”

Preliminary field trials of 2” Water Barrier Filters (WBF) commenced in July 2020. Restrictions imposed by the international pandemic have impacted heavily on the number of fuellings and total volumetric throughput available at each trial location. Despite this it has been possible to gain some meaningful data for the ongoing evaluation of this technology and JIG, A4A and IATA remain committed to completing the trials for this technology.

To date the technology has operated reliably to remove water and particulate with no downstream sensor alarms or warnings. Maximum changeout differential pressure (22psi) has been reached on four occasions requiring element changeout. These increases in dP are believed to be linked to ultra-fine particulate blocking the elements. It should be noted that all fuel was within specification and ‘normal’ range for filtration time test and gravimetric testing (ASTM D5452). These events are under investigation with Parker Velcon.

Table 1 - Data gathered to date from WBF Preliminary trials.

Location/ vehicle type ⁽¹⁾	#Days in vessel	# Days in service	Vessel Throughput (‘000 litres)	Throughput per element (‘000 litres)	#Outlet checks	#Outlet alarms
1- Refueller	9	9	227 ⁽²⁾	16	0	0
	10	10	182 ⁽²⁾	13	0	0
	3	3	35 ⁽²⁾	2.5	0	0
2- Dispenser	66	45	3,606 ⁽²⁾	113	0	0
	98	40	1,560	49	0	0
3- Cart	180	7	135	5	0	1 ⁽³⁾
4- Dispenser	131	44	1,262	57	0	0
5- Dispenser	85	16	295	8	0	0
6- Dispenser	89	33	1,911	56	0	0

(1) Locations cover: Europe, South East Asia, Africa, Middle East and North America

(2) Reached maximum changeout dP (22psi)

(3) Alarm related to EWS configuration, not related to WBF performance.

Results gathered so far have shown very short service life at two field trial locations relative to filter monitors installed on the rest of the fleet at those two locations. At one location short service life was repeated for three consecutive sets of water barrier filters. Investigations so far have not revealed any unusual circumstances or events in the supply chain that could give insights into why short life is being experienced in normal operations with on-specification fuel. More data is therefore required to understand the variability in WBF performance and to be able to assess suitability across this technology’s intended range of applications.

Due to the importance to the industry of collecting and understanding this data, the WBF will be extended into full Field Trials, with a 7th location expected to come online in Q1 2021. Consequently, we will be gathering data at the same number of locations used in the Field Trials for other filtration technologies.

2. STATUS OF NEW TECHNOLOGIES

The status of different “drop-in” technologies is shown in the table below.

Process step	<u>WCF⁽¹⁾</u> <u>FACET</u>	<u>DDF/EWS⁽²⁾</u> <u>FAUDI 2” & 6”</u>	<u>WBF⁽³⁾</u> <u>PARKER 2”</u>	<u>WBF⁽³⁾</u> <u>PARKER 5” & 6”</u>
1 - Filter Qualification	Qualification specification not in development	Completed	Completed	Addendum to EI 1588 in progress. Parker target for qualification Q2 2021
2 - Robustness Assessment		Completed	Completed ⁽⁴⁾	
3 - Field Trial		Completed	In progress	
4 - Evaluation of results		Completed		
5 - Adopt in Standards		Completed		

(1) WCF: Water Containment Filter

(2) In conjunction with the Faudi AFGUARD® ; DDF: Dirt Defence Filters (EI 1599); EWS: Electronic Water Sensor (EI 1598);

(3) WBF: Water Barrier Filter (EI 1588)

(4) EI recommended careful assessment of elements from field trial locations to assess for surfactant resistance capability and whether extended duration dormancy leads to microbiological growth.

Users are reminded that:

- Filter Water Separators qualified to EI 1581 are an accepted and established alternative to FM for into-plane fuelling operations with Jet fuel.
- It is not guaranteed that new technologies will be adopted into JIG standards. As communicated in Technical Newsletter 4, new filtration systems will be included in the Standards “only when JIG has received robust evidence of the suitability of these systems for aircraft fuelling operations, derived from an extensive field evaluation and assessment”

3. FILTER MONITORS AND NEW TECHNOLOGY UPDATES

EI: EI 1583 7TH Edition Qualification Specification was withdrawn by the EI on 4th December 2020.

JIG: The phase out date for FM from the JIG Standards was communicated in Bulletin 132. It should be noted that it can take a number of years for newly developed technologies to be qualified to an EI Specification, complete the field trial process and if successful be adopted into the JIG Standards.

It remains the user's responsibility to ensure that any filter monitor elements still in use are qualified to EI1583 7th Edition.

Facet: *WCF* - This technology remains under development. To date, the EI has not confirmed whether it will develop a laboratory qualification specification.

Faudi: *DDF/EWS* - As communicated in JIG Bulletin 130, the Faudi DDF + EWS combination has been adopted into the JIG Standards. Details regarding operation can be found in Bulletin 130.

Parker Velcon: *WBF 5" and 6"* - Development work is close to completion. Parker Velcon are working with EI AFFC to develop an addendum for EI 1588 to cover 5" and 6" WBF elements and have stated their intention to perform qualification testing for 5" and 6" elements towards the end of Q2 2021.

4. BULLETIN 132 (FILTER MONITOR PHASE OUT) – MOCS AND TRANSITION PLANS

Following the publication of Bulletin 132, we are clarifying some of the definitions used in this Bulletin and previous communications regarding Filter Monitor Phase-Out.

Definitions:

Transition Plan: is a document that lists equipment fitted with FMs at each site and the associated schedule to transition to replacement technology. It shall describe the expected technology that will replace the FMs in that site's operations, and the transition plans shall ensure there is adequate time to execute the change and corresponding MOC to meet the expected timeline and associated actions.

Note: Where users are awaiting inclusion of a new technology into the JIG standards before phasing out filter monitors, consideration should be given to having a back-up plan specifying a technology which is already included in JIG standards (listed in B132).

If the desired new technology is subsequently not accepted in JIG Standards, the back-up plan shall consider including a start date which will enable the user to adopt the accepted technology by the users' originally planned transition date.

MOC for Transition: Authorised management of change plans shall be put in place to manage the implementation of the replacement technology and the actions required to effect the change in a safe and compliant manner. As a minimum this shall cover the key aspects of the transition plan. The minimum requirements for a MOC for transition to DDF+EWS technology are described in bulletin 130.

Reminder of the requirements:

Transition Plan: For now, this is a Recommended Best Practice ("should") but preparation of a transition plan is strongly encouraged if one is not already in place.

MOC: Any users who plan to change their filtration technology shall have an MOC in place prior to any modifications being undertaken. This requirement is mandatory whether a Transition Plan is in place or not.

5. FAILURE MODES AND EFFECT ANALYSIS (FMEA) REPORT FOR FAUDI DDF+EWS

Bulletin 130 proposed users carry out an FMEA or similar review where DDF+EWS was planned to be adopted in order to evaluate the interface of the new technology with the other equipment and systems on the vehicle(s) concerned. To support user assessments, excerpts from the FMEA report for Faudi DDF+EWS can be found on the JIG website at this [LINK](#). The document includes the vehicle design basis which was used for the study as well as the recommendations generated.