

For Information Purposes only. Applicable to: All Filter Monitor Users

Background

JIG Bulletin 105 informed users of Filter Monitor systems of the events that supported the industry developing a roadmap to progressively phase out Filter Monitors. Bulletin 105 also defined actions that are believed to provide additional mitigation of potential SAP migration from Filter Monitors, whilst the industry is working to develop replacement filtration technologies suitable for aircraft fuelling.

Introducing new filtration technology into the field

Before new filtration technology can be introduced into the field, the filter supplier(s) are required to successfully complete qualification testing of their filters/sensors in the laboratory, against the relevant EI specification. However, qualification testing in isolation only provides a limited assurance to the end user due to the inherent limitations associated with testing under controlled, laboratory conditions. It is noted that qualification testing of known technology is based on successful history of field performance, whilst this is not the case with new technology and further work becomes necessary.

Therefore, for new technology, additional testing for robustness evaluation followed by field trials are also required. New filtration systems are then included in JIG 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.

Field Trials

JIG formed a Filtration Working Group (FWG) which has developed a field trial programme, designed to assess available new technology at several locations world-wide, under a range of diverse operating and environmental conditions. This programme offers additional safeguards for the delivery of clean, dry, on specification fuel to the aircraft, throughout the assessment period. The programme has been developed in conjunction with and validated by IATA and A4A as the industry-approved JIG field trial protocol.

JIG recently signed a cooperation agreement with IATA and A4A with express commitment from all parties to evaluate the suitability of available technologies as potential replacement of filter monitors, under a co-funded field trial programme. This underlines the concerted worldwide approach to safe fuelling.

Alternative Technologies to Filter Monitors

The transition from filter monitor technology needs to occur in a safe and reliable way and requires sufficient capacity of suitable alternatives to replace filter monitors, as detailed below.

Vessel Replacement

Filter Water Separators qualified to EI 1581 is accepted by JIG standards for immediate use.

In addition to 6" FWS systems, a new smaller and lighter 2" FWS system qualified to EI 1581 6th edition is also currently available by one filter supplier. These systems are also accepted by JIG standards for immediate use, but users are recommended to perform their own assessment to evaluate field performance, in accordance with JIG Bulletin 102.

Element Retrofit

In addition, the industry has also been working towards the development of retrofit options for filter monitors. The known filtration technologies currently under consideration are:

- Water Barrier filters as soon as they are successfully qualified to EI 1588
- Dirt Defence filters qualified to EI 1599, used in conjunction with an EI 1598 qualified sensor

The status of each of these technologies is explained below. These new systems require robustness assessment and field trials, as explained below.

As other alternative filtration and/sensing technologies are developed, they will be considered for possible inclusion into the field trial programme.

Current Status

- **Dirt Defence Filters (DDF)**

At present, 2" DDF qualified to EI 1599 (2nd ed) are available from two suppliers and 6" qualified DDF are available by one of these two suppliers. In addition, a third supplier has also stated their intention to qualify their 2" DDF against EI 1599 in 2019. Electrostatic testing (which is now mandatory as part of EI 1599 qualification testing) has been completed by one supplier. Robustness evaluation of that system has also been completed and the results are currently under review. The testing of the second system is in progress. As soon as conclusions on their robustness are reached, DDF in conjunction with EI 1598 qualified sensors are then planned to be subjected to a field trial, under the auspices of the programme stated above, which is expected to start in Q1-2019. The programme is designed to evaluate the suitability of combination of EI 1599 filters with EI 1598 sensors in fuel cleanliness control.

- **Water Barrier Filters (WBF)**

At the time of publication of this Technical Newsletter, there are no WBF qualified to EI 1588 by any filter supplier. JIG is aware that suppliers are working on the development of WBF. However, the development progress of this technology has been slower than originally anticipated. JIG has been informed by the filter suppliers concerned, that qualification work may take place in 1H-2019.

Once WBF elements are qualified to EI 1588 (including electrostatic testing which is now mandatory as part of EI 1588 qualification testing) and have successfully completed the robustness testing, WBF may then become available for field trial.

Development of other filtration technologies

- **Other Water removal Filters**

One manufacturer has shown initial details of a 'water holding' filter with similar water removal performance characteristics as a filter monitor, which might be an additional drop-in solution. However, there are significant hurdles to the introduction of this new type of filter.

Electronic Sensors

At present, an EI 1598-qualified electronic sensor is available by one supplier for evaluation in combination with the filters currently being tested (per above). Additional sensors developed and qualified to EI 1598 by other suppliers will also be subject to evaluation, as they become available.

Compliance with JIG Standards

The above systems under evaluation are not currently permitted for general use in JIG standards. As these systems are based on technologies which are at different maturity levels, the date of readiness of the new systems for field deployment will likely be different. It is therefore expected that there will be a staged introduction of these technologies into the field.

Furthermore, as water management within fuellers is perceived to be a lower risk potential than that from hydrant dispensers, as control checks are made on the bulk fuel after each loading for instance, the range of suitable technologies for fuellers and dispensers might therefore be different.

New technologies will be progressively accepted into JIG standards after successful completion of respective field trials and assessment.

Until the industry has reached conclusion on the suitability of new technologies for aircraft fueling operations, the end users are reminded of the following:

- 1) FWS meeting EI 1581 (latest ed.) is accepted by JIG for Jet Fuel and Avgas fueling equipment
- 2) Microfilters meeting EI 1590 (latest ed.) is accepted by JIG for Avgas fueling equipment
- 3) Where filter monitors remain in use, the actions of Bulletin 105 and of any subsequent follow-up bulletins shall be implemented within the required timelines.
- 4) For new builds, Bulletin 105 recommended that the phase out of filter monitors and future changes in filtration/sensing technology need to be taken into consideration, in both the choice of filter vessel types and space/pipework flexibility, to allow for possible future modifications.