

# The Clarifier

## Clarification of JIG Technical Newsletter TN7

Parker Velcon would like to provide some clarification regarding the status of our EI 1588 Qualified CDFX™ technology and specifically

(EI) Testing protocol and thus has been approved to proceed with the JIG, A4A and IATA field trial program.

As previously stated, the CDFX barrier technology was developed to directly replace existing 2" SAP type monitors and provide a drop-in solution that protected against water and dirt contamination. Parker Velcon embraced this extremely difficult challenge with a goal to provide end users with a seamless but safe replacement. It is important to understand that **the CDFX provides all the protection of EI 1583 monitors without using any absorbent material.**



agreed that the CDFX is considered technically suitable and should proceed to into-plane field trials.

However, recent publications have exhibited some confusion as to whether this type of technology is fit for purpose. The following information serves to clear up any confusion in the market.



in response to the recent Technical Newsletter (TN7) publication from the Joint Inspection Group (JIG) that included an EI AFFC document link. Recent questions and concerns from customers leaves us to conclude that disinformation being circulated may be causing some confusion in the industry. In our February 17<sup>th</sup> Clarifier Newsletter (<https://velcon.us/knowledge-base/parker-velcon-cdfx-ei-1588-water-barrier-technology-approved-for-field-trials>), we announced that our CDFX Barrier Technology had successfully completed all stages of Energy Institute

As this technology is new to the aviation market, and with SAP technology shortcomings only coming to light after 40+ years of service, the EI Aviation Fuel Filtration Committee (EI AFFC) deemed it prudent to undergo many additional tests including Robustness Testing to ascertain that this technology is safe for fueling applications. Despite the shorter service life observed during robustness stage 2 testing, the EI AFFC eventually

Replacement Technologies	Removal Capabilities		
	Solid Contaminants	Emulsified Water	Water Slug
<b>EI 1588</b> Barrier Technology	YES	YES	YES
<b>EI 1581</b> Filter/Water Separator	YES	YES	NO
<b>EI 1599 &amp; EI 1598</b> Sensor/Dirt Defense Filters	YES	ALARM ONLY	ALARM ONLY

*Parker Velcon CDFX™ is the first and only technology to successfully complete all the latest EI requirements. This includes Electrostatic Charge Generation, Robustness Phase I and Robustness Phase II testing.*

*The Clarifier* is published by the Marketing Department of Parker Hannifin Corporation | Filtration Group | Aerospace Filtration Division

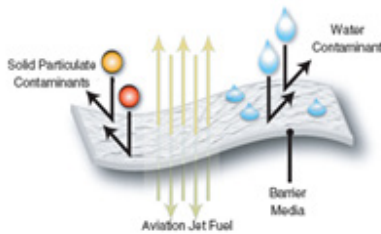
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Can the CDFX be disarmed by surfactants?

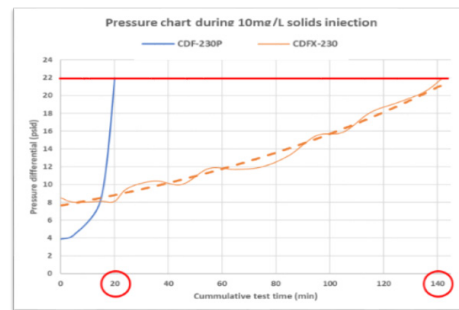
There is a suggestion that this technology has not been fully tested for disarming by surfactants. The EI Qualification robustness stage 1 test includes a surfactant package that involves Fuel System Icing Inhibitor (FSII) additive in



which SAP monitors could not function. The CDFX performance was proven to be outstanding in these conditions. Furthermore, in robustness stage 2 testing, CDFX elements were subjected to hundreds of thousands of gallons/liters of throughput. When these elements were returned to our lab and tested in the presence of an EI witness, no apparent reduction in water removal capability was observed. There was no evidence to suggest that our CDFX elements were disarmed by surfactants. In fact, there is considerable evidence (including significant field exposure) indicating they are not. Parker Velcon is confident that this will be the case in operational conditions.

Does the CDFX experience shorter life due to high efficiency?

There is a suggestion that CDFX elements might experience short life due to its highly efficient particle removal capability. Once again, we must point out that in testing to the EI 1588 protocols, the CDFX exceeded the life expectancy of SAP type monitors by as much as 8 times.



Every location has a different environment as far as solid contamination is concerned. There have been cases of SAP monitors, coalescers and even microfilters reaching terminal dP prematurely. Some observed cases occurred in days. Nevertheless, this should not be concluded as a failure of the product but, rather, an example of the filter doing its job in removing unwanted and potentially dangerous contaminants. We expect that there will be locations where CDFX elements might experience short life on some occasions, as is also the case with fuel monitors and coalescers. However, rest assured we have every confidence that downstream of the CDFX will be clean dry fuel. We make no apologies that it might be cleaner than you may be used to. Having said that, it is also our belief that for many locations or many global operations the CDFX will provide life expectancy similar to the existing SAP monitor.

It is our belief that safety is the primary focus of our industry. Operational concerns about SAP media migration have led the industry to mandate their replacement.

What does the CDFX have to offer?

Simply put, “Clean Dry Fuel” at the wing and a drop-in solution with no additional modifications or hardware requirements is the challenge the industry presented us with and this is exactly what Parker Velcon delivered. Hydrant system operators can be assured that if water does present itself, the CDFX will remove it and therefore provide the protection required to safely continue fueling and delivering “Clean Dry Fuel”.

*Dirt Defense Filters (DDF) do not remove water. In fact, they are likely to exacerbate the problem as they are known to coalesce water on the “clean side”, sending it on its way to the aircraft wing.*

**Safety is Our Priority**

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## Timing and Availability

Field Trials will result in evaluating and determining the performance of the CDFX and that will require data collection from the selected trial locations. There will be a continual evaluation process occurring throughout the trial to closely monitor the performance and although it may take many months to get the results needed for the governing bodies to analyze, we feel that a strong assessment can be made much sooner on the progress of the trial within a shorter timeframe.

The Parker Velcon CDFX can be manufactured at volumes anticipated by the industry for changeover from SAP filter monitors. As industry groups (e.g. JIG and A4A) have already allowed the extended use of EI 1583 monitors past the end of December 2020, we expect the transition from SAP elements to barrier elements to seamlessly occur during the 2021 calendar year.

## Concerns: Short Life, Cost

To date, the only external testing to be completed has been the Robustness Stage 2 testing at tank farm facilities to achieve continuous high fuel throughput conditions. Unfortunately, these tests did not meet the anticipated throughput. Nevertheless, significant volumes of fuel throughput were achieved (up to 310,000 gallons/1.17M liters per cartridge). The CDFX fully met and exceeded expectations with regard to performance and robustness.

While we have yet to determine the actual list price of these elements, to put this into a cost perspective, based on estimated list price and the fuel throughputs achieved under the challenging Robustness Testing conditions, (not exactly typical of underwing conditions) we estimate the operating cost for these elements to be in the region of:

- \$0.0005 per US gallon
- \$0.00013 per liter

**It is impossible to put a price on safety. However, we expect that actual operating costs will be lower.** Also taking into consideration the conversion to CDFX

- Does not require physical filter vessel alterations
- Does not require the addition of complicated equipment
- Does not require PLC/electrical components
- Does not require annual re-certifications

We believe the Parker Velcon CDFX will provide a safe and cost-effective solution to achieving your fueling obligations.

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