



TESTING FOR MICRO-BIOLOGICAL GROWTH

In the last newsletter we wrote about Micro-Biological Growth (MBG) in Jet fuel and how to prevent it with regular draining to remove water and regular sample inspection.

In this edition, we take this one stage further!

So, you are performing a morning low-point drain and you notice some free water in the drain, but it is not quite as clear as you have seen before or there's a small amount of dark spotting within the lower part of the sample or on the bottom of the glass jar and you wonder whether this might be micro-biological growth.

Well, you need to test this to determine whether it is micro-biological growth or not.



There are a number of test kits available to test for MBG but the one we like best is the MicrobMonitor 2 by ECHA.

The MicrobMonitor 2 provides five samples allowing you to perform a test and then perform a second without having to buy more kits.

Most poor MicrobMonitor results are due to one cause – not flushing the sample point before taking the fuel sample into MicrobMonitor test kit.

Just as we do for daily fuel quality checks, the sample point should be flushed so the sample taken is truly a representative sample of the fuel we want to test. Not fuel that may have been sitting in the sample point accumulating water and or sediment and allowing any microbes to concentrate and grow in small amounts since the last sample was taken. Microbes start growing in an astoundingly short timeframe.

Most test results where the samples are taken from a sample point that has not been flushed will produce a high of medium number of growth cultures. If repeated from a flushed sample point, the test results will normally show a significantly lower number of cultures which is a more representative result of any microbes in the fuel.

Note: S.T.A.R. has no association with and receives no financial compensation from any test kit manufacturers or suppliers.



SUSTAINABLE AVIATION FUELS (SAF)

Sustainable Aviation Fuel is the latest attempt by the Aviation fuels industry to help reduce carbon emissions from aircraft.

SAF is a 100% low-carbon blend component liquid fuel. It contains lower greenhouse gases, is lower polluting and is a 'drop-in' replacement for Jet fuel.



There are currently 7 approved conversion technologies able to produce accredited fuel. Starting with the original 2009 Fisher Tropsch process they now include the HEFA-SPK Hydro processed esters and fatty acids, SIP Synthesized iso-paraffins, FT-SPK/A Fischer-Tropsch with aromatics, ATJ-SPK Alcohol-to-jet (Iso-butanol), ATJ-SPK Alcohol to Jet (ethanol), and the HC- HEFA SPK CHJ method.

All have the same basic objective which is to provide complying Jet fuel from non-crude molecules. These need to behave in the same way

as traditional jet fuel through the distribution and transport processes and in aircraft.

As a 'drop-in' replacement for traditional jet fuel, SAF needs to not just meet the ASTM and DEF-STAN specifications but must also behave in the same way traditional jet fuel does without causing operational problems in aircraft engines, airframes (ie fuel tanks) or associated components.

The terminals that undertake the blending of SAF with traditional jet fuel become 'manufacturing plants' taking the responsibility for the certification and performance of the resultant blend. They are no longer a traditional terminal receiving, storing, recertifying and distributing jet fuel. They now need to act as though they are a refinery or manufacturer and certify the specifications and performance characteristics of the fuel.

The cost of SAF is currently greater than the cost of traditional Jet fuel but this is likely to change over time. As technologies improve, we are likely to see greater proportions of SAF being used v traditional jet fuel.

For airports, fuels blended with SAF will be treated no differently than traditional jet fuels. This fuel will be tested to ensure it meets the specifications required. It will be tested for density, water and particulates and any fuels that do not meet the requirements will need to be isolated.



THE LATEST ON FILTRATION

There are no updates on filter elements from the major element suppliers.



As advised in STAR's last newsletter, the Parker-Velcon Water Barrier elements provides a drop-in replacement for the current Filter Monitor elements and have proven to be effective at preventing water migrating through the elements.

The CDF-X elements not only removes any water but also ultra-fine particulates from aviation fuels. These elements will capture minute sized particulates that would normally pass through other element types.

These ultra-fine particles pose no threat to the aircraft, and fuel containing these ultra-fine particulates is on-specification.

The issue with the elements that are capturing these ultra-fine particulates is their relatively short lifespan. They may require replacement many times per year which makes them expensive and impractical in their current form for many sites.

Facet's Water Containment elements are still being tested and as such, we have no further information on the progress of these or when they may be qualified against the relevant EI standards.

Continued use of Filter Monitor elements is quite acceptable for those that do not want to change to the only qualified alternative – Faudi's Dirt Defence Filter and Electronic Water Sensor. Use of the Filter Monitors still requires a detailed risk assessment which includes the Differential Pressure to be monitored, elements replaced when the DP reached 15psi or annually and a DP High pressure switch to be fitter that would shut down fuel flow at 15psi.

GAMGRAMs

Gammon Technical Products started in 1960 by Howard Gammon, and continues as a family company with Jim and his daughter Sandi.



The one immutable fact about Jim, is his selflessness when it comes to imparting knowledge for the Aviation industry and the components that Gammon make as well as those of others.

Jim started the GAMGRAMs providing technical details about the workings of various aviation fuels components and processes written for all of us non-technical people to help educate and inform us all.

The GAMGRAMs are a series of documents that Jim and his company continue to update and expand on and are an absolutely invaluable resource. What's more, they are all free and can be found on the Gammon website: <http://gammontech.com>