SI 09 I 0001 Rev.0 2009/09/04			
To :	Any MCR aircraft user		
Scope:	Any MCR aircraft		
Author :	D. SOULAT		
Chief of monitoring function	C. ROBIN		
VISAS :			

DYN'AERO's RECOMMENDATIONS REGARDING THE USE OF FUELS FOR MCR AIRCRAFT

Darois (FRANCE), Friday 4th, September 2009

Given today the emergence of new fuels and changes in the chemical composition of existing fuels, DYN'AERO wishes to clarify its recommendations on the suitability of fuels for MCR aircraft type and on the associated operating procedures.

English translation for information only.
Only the original French text can be relied upon.

A. CONSEQUENCES OF THE CURRENT USE OF NON-AVIATION FUEL IN GENERAL AVIATION

A.1. Immediate consequences.

It is clear that petrochemical companies are delivering fuels with no guarantee and without providing information on the chemical composition. Additionally there is a trend in non-aviation fuels of increased ratio of alcohols and the presence of these components together with other additives may:

- adversely effect the sealing products used in tanks,
- damage the whole fuel circuit and especially seals
- promote an increase in water content
- increase the risk of vapour lock
- reduce range

It should also be noted that many aviation authorities in Europe and elsewhere have already taken steps to restrict and even prohibit the use of non-aviation fuel for light aircraft.

DYN'AERO S.A. - 19, rue de l'Aviation, F21121 Darois, FRANCE **Tel :** +33 (0)3 80 35 60 62 **Fax :** +33 (0)3 80 35 60 63 www.dyn.aero contact@dyn.aero

A.2. Risk behaviours.

In addition to the lack of information regarding the chemical composition of non-aviation fuel, certain behaviours and handling (mainly associated with supply fuel from an automotive petrol stations), may further increase the risk of incidents and accidents.

A.2.1. Supply.

Automotive fuel stations do not guarantee the absence of impurities and water in fuel distribution, unlike aviation facilities which are subject to specific standards. Moreover, multiple sources and means of supply greatly increase the risk of contamination. This can only be countered by using a controlled unique supply chain. Finally, more and more petrol companies are restricting or even prohibiting the use of their non-aviation fuels in light aviation ; Further information can be found on the supplier's safety datasheet for the product concerned.

A.2.2. Transportation of fuel.

The use of jerry cans to transport fuel is harmful insofar as these containers are a source of innumerable impurities. The content must be filtered to be usable. In addition, some fuels (such as SP95 and SP98 in France) are sensitive to light and can only be transported in an opaque container.

Additionally, fuel carried in jerry can may interact (and thus become impaired) through contact with the wall of the container if it is not metal.

Note: the transport of flammable products via the road network is generally regulated and the relevant regulations of the country concerned should be obtained before any such operation.

DYN'AERO S.A. - 19, rue de l'Aviation, F21121 Darois, FRANCE Tel : +33 (0)3 80 35 60 62 Fax : +33 (0)3 80 35 60 63 www.dyn.aero contact@dyn.aero

A.2.3. The instability with time and seasonality of non-aviation fuel.

Non-aviation fuels are very unstable over time (SP95 and SP98 in France) and storage in transport containers such as jerry cans, even for a few days is discouraged. Many non-aviation fuels have a different summer and winter composition with an evident change in their evaporative characteristics. Vapour lock is almost an inevitability for fuels with the saturation vapour pressure at 50 ° C below 70kPa. Risk is also increased at high altitude and at elevated temperatures.

A.2.4. The identification of fuel used.

Using fuel where the alcohol, among many other components, is not guaranteed raises the obvious problem of monitoring. The composition information, including alcohol, must be recorded in the logbook (or other document provided for that purpose), this provision is prescribed in some countries for example the United Kingdom. One of the several tests available should be used to test alcohol levels and appropriate records kept.

B. DYN'AERO's RECOMMENDATIONS.

WARNING

DYN'AERO's recommendations do not replace legal requirements regarding the aircraft, issued by regulatory authorities or the engine manufacturer.
Users must be sure that fuels used comply with:

- Legal Requirements
- Engine manufacturer's instructions
- DYN 'AERO's recommendations

In order to limit the risk that changes in fuel or the inappropriate handling of fuel may cause an accident, DYN'AERO issues the following recommendations.

DYN'AERO S.A. - 19, rue de l'Aviation, F21121 Darois, FRANCE **Tel :** +33 (0)3 80 35 60 62 **Fax :** +33 (0)3 80 35 60 63 www.dyn.aero contact@dyn.aero

B.1. INSTRUCTION #1: Exclusive use of aviation fuel.

DYN'AERO recommends that the users of all MCR aircraft in the case of leaded fuels use only aviation fuel of an octane guaranteed equal or greater than AVGAS 100LL. Regarding unleaded fuels, an octane greater than or equal to 95R0N. Moreover the rate of total alcohol must be clearly quantified, guaranteed, and less than or equal to 5%.

These recommendations are similar to the Rotax engine instructions from the SI-912-016 R1 and SI-914-019 R1 (Revision 1 only). Only revision 1 should be considered to take into account the position of DYN'AERO.

B.2. INSTRUCTION #2 : Prohibit the use of E10 or other new fuel.

Dyn' Aéro strongly discourage the use of E10 or any other newly marketed fuel

Where appropriate, a review of this SI will be undertaken to reflect this new fuel. The engine manufacturer has no way of ensuring the suitability for each aircraft type. Therefore this recommendation remains valid even if the engine manufacturer decides to take a broader position, particularly concerning alcohol content.

B.3. INSTRUCTION #3 : Filling on airfield.

Regarding any MCR aircraft DYN'AERO recommends refuelling only with aviation fuel from an aviation fuel station based on an airfield.

These facilities, contrary to automotive stations, ensure that fuel is delivered free of water and other impurities.

B.4. INSTRUCTION #4: Monitoring of fuel used.

DYN'AERO recommends rigorous recording in the flight logbook, or on any other document used for this purpose, each filling operation specifying the quantity and quality (kind of fuel and fuelling station) used.

Generally this information is a regulatory requirement.

DYN'AERO S.A. - 19, rue de l'Aviation, F21121 Darois, FRANCE **Tel :** +33 (0)3 80 35 60 62 **Fax :** +33 (0)3 80 35 60 63 www.dyn.aero contact@dyn.aero

FOR ANY FURTHER INFORMATION:

Documents From ROTAX engine manufacturer:

Service Instruction on suitable fluids for 912 and 914 series (Revision 1)
2008
Choose the version to be read :

Documents from aeronautical authorities:

EASA (Europe) Safety information notice	FAA (USA) Ethanol Safety Document	Safetysense Leaflet CAA (UK) on fuels	Recommendations Notice DGAC (FRA) on fuels	Airworthiness Notice DGCA (United Arab Emirates)
2007	2006	2005	1999	1990
Choose the version to be read	Choose the version to be read :	Choose the version to be read :	Choose the version to be read :	Choose the version to be read :

Fuels technical documents:

Technical sheet for SP95 fuel	Technical sheet for SP98 fuel	European Norm for Lead free Fuels	Safety Datasheet for AVGAS 100LL (TOTAL)
2005	2009	-	2008
Choose the version to be read :	Choose the version to be read :	Choose the version to be read :	Choose the version to be read :

If you suspect that your aircraft could have suffered from any damages or unusual behaviour after having used non aeronautical fuels, please contact DYN'AERO Airworthiness department as soon as possible.

navigabilite@dyn.aero

airworthiness@dyn.aero

DYN'AERO S.A. - 19, rue de l'Aviation, F21121 Darois, FRANCE **Tel :** +33 (0)3 80 35 60 62 **Fax :** +33 (0)3 80 35 60 63 www.dyn.aero contact@dyn.aero