QUALITY AIRCRAFT SINCE 1948
TECNAM

SERVICE INFORMATION LETTER

N° **SIL-2015-03**

November 27th 2015

Ed.1 Rev.0

Subject: Lycoming automotive fuels

The purpose of this Service Instruction is to provide guidelines to the owners and operators of Tecnam P2010 aircraft regarding the Tecnam SB 182-CS.
This is a practical guide and explanation of what illustrated in the official Lycoming SI1070, in its latest revision "S" that answers most of question received from operators on a daily basis.
The choice to design the P2010 aircraft around the IO-360-M1A was mainly related with the operations this engine allows: this powerplant is in fact the one which ensures the maximum flexibility possible on the Lycoming catalogue in terms of approved fuels. The following list gives the answers to the most Frequently Asked Questions concerning the Automotive Unleaded approved Fuels, now approved through SB 182-CS:

1. **Most of references of unleaded automotive fuels are in terms of "AKI", what this term means?**
   A: the AKI index is one of the parameters which identify the fuel grade. The Anti Knock Index is the arithmetic average of the Research Octane Number (you will find this as "RON") and Motor Octane Number (MON). Having the RON and MON values allows you to compute the AKI index.

$$AKI = \frac{RON + MON}{2}$$

2. **What happens if I only have the RON value available for a selected automotive fuel?**
   A: While other engine manufacturers, such as Rotax, give limitations in terms of both RON and AKI values, Lycoming only ask for IO-360-M1A the AKI index to be at least equal to **93**. This means that, even if the RON value of the fuel you are evaluating could be high, you are not allowed to operate the engine with this fuel, unless your supplier provides you also the "MON" value giving you the possibility to calculate the AKI index.

3. **Can I operate the engine if fuel contains ethanol?**
   A: NO! Ethanol, together with methanol, is a prohibited oxygenates and cannot be present in the fuel.

4. **I read, on my proposed fuel specs, "mtbe+etbe" or "Bio ETBE", are they related with ethanol/methanol which are prohibited?**
   A: NO, the presence of these additives is not related with ethanol. You can find SI1070 matching fuels having >10% of these bio-additives. Therefore their value is not an issue when selecting the suitable fuel for your P2010[1].

5. **I have contacts with major fuel supplier because I am a high fuel consumer (i.e. flight school), how can I ask the proper fuel to my fuel supplier?**
   A: generally, the oxygenates inclusion in fuel, as the vapor pressure control, is not made into the refinery but at fuel distributor (chain ring before the fuel station). For this reason, if your company is

[1] As further reference, ethanol formula is CH_3CH_2OH, while ETBE one is $C_6H_{14}O$ and MTBE one is $C_5H_{12}O$.

in contact with a fuel distributor/supplier, you can ask them to supply fuel containing ZERO ethanol/methanol, matching the vapor pressure characteristics and, mainly, a certificate.

6. **What about vapor lock?**
   A: During the long flight and ground test campaign made by Tecnam, where all the performances have been surveyed using automotive fuel in summer season, the selected fuel was the one having a vapor pressure value conservative compared with the one required by SI1070. A Class A fuel considers a vapor pressure within 60kPa, that is the maximum value you need to request your fuel provider.

7. **What should I know also to order the proper automotive fuel for my IO-360-M1A?**
   A: Before placing an order to your fuel provider, refer to the Lycoming SI1070S Service Instruction, to which Tecnam strongly suggests to be familiar with.

8. **What about the proper engine oil should I use?**
   A: Also in this case, the Lycoming SI1070S gives additional details and guidelines.

9. **What about Aviation Fuels approved?**
   A: This document only refers to the Unleaded Automotive Fuels, refer to the SI1070S or latest revision to read more about the approved aviation fuels which becomes all approved to the use on P2010 through SB 182-CS.

10. **What is the difference between automotive fuel and pump-gas?**
    A: They seem to be the exact same thing, but they don't. The difference is so simple and so important: the pump gas fuel, that you get from fuel station filling a portable tank of your car, has characteristics that you simply.... don't know. While a fraud in your car fuel could result into a low performance or even long term damages in the engine, you cannot take risks when you fly. Automotive fuels requested directly from fuel distributors can be provided with certificates, that prove what you purchased on each single batch!

11. **What is the first step to go-green and save money with automotive fuel?**
    A: Simply contact your local fuel supplier, and submit the specification contained herein and within SI1070. If you are an average user of fuel (i.e. flight school) you will easily obtain a significant cost saving that will improve your business in short time.

For further information please contact TECNAM:
Tel 0039 0823 620134
Fax 0039 0823 622899
E-mail technical.support@tecnam.com