AVIATION FUELS: ISSUES AND ANSWERS

LYCOMING PRESENTS 10 QUESTIONS ABOUT FUELS

1. WHY IS THE EPA ACTING NOW TO REMOVE LEAD FROM AVGAS?

The fact we face is that because automobiles no longer burn leaded fuel, aviation fuel has become the largest source of airborne lead emissions. By EPA reports, 45% of airborne lead emissions is attributed to TEL enhanced avgas. The U.S. Environmental Protection Agency has been petitioned by environmental concerns and will need to act in accordance with the U.S. Clean Air Act. It has begun a process that will most likely lead to the elimination of leaded aviation gasoline within this decade.

2. WHY NOT JUST REMOVE THE LEAD AND GO WITH 94UL (OR ANY OTHER SUB-100 OCTANE FUEL)?

First of all, removing TEL from avgas does not result in 94UL, it results in 91UL, a fuel that has been approved by Lycoming for at least two decades. 94UL is a special fuel, and not all producers can make it today. The bigger issue is that the aircraft that need 100 octane fuel to maintain their performance are also the aircraft that fly the most, use the most fuel, and access related aviation services most often. If these aircraft lose access to 100 octane and can no longer perform the missions for which they were intended, owners and operators may decide to remove them from service, decreasing demand for aviation grade fuel and aviation services. Even expensive retrofits would likely fail to make up for the loss in octane. To make up for the lost revenue, providers of aviation goods and services would likely be forced to increase prices charged to those who remain in piston general aviation. In total, the economic cost to general aviation could be in the billions of dollars.

3. WHAT ARE GENERAL AVIATION-RELATED ASSOCIATIONS DOING TO MEET THIS CHALLENGE AND THE NEEDS OF THOSE THEY REPRESENT?

Several industry associations have formed a coalition to address the avgas issue. These include the Aircraft Owners and Pilots Association (AOPA), the American Petroleum Institute (API), the Experimental Aircraft Association (EAA), the General Aviation Manufacturers Association (GAMA), the National Air Transport Association (NATA), the National Business Aviation Association (NBAA), and the National Petrochemical and Refiners Association (NPRA). The coalition has proposed a transition from 100LL to an unleaded fuel over a 10-year period. This path would reduce airborne lead emissions in the near term and allow our industry to logically transition to a new fuel standard without a crippling economic impact. It would give researchers time and resources to develop and certify new 100 octane unleaded options. It would give owners and operators time to upgrade impacted aircraft materials within the natural TBO cycles of their engines and aircraft, if necessary. Lycoming supports the "letter group" activities but believes that a replacement fuel candidate needs to be identified quickly to allow this program to succeed. The "R&D" part cannot last more than 1-2 years.

4. IF MY ENGINE CAN RUN ON LOWER OCTANE FUEL, WHY SHOULD I SUPPORT A 100 OCTANE AVGAS REPLACEMENT?

Competing voices will not serve us well. Fragmented opinion places the future of piston powered general aviation at risk. We must focus on and stabilize the future piston aviation gasoline fuel supply. If everyone gets behind 100 octane, investors and the Federal Aviation Administration are more likely to apply capital and resources to finding a 100 octane unleaded fuel replacement and bringing it to market. Without a unified voice from those who are most impacted by these developments, a bad decision might be forced on everyone. We have one chance to get this right. The industry needs an aviation grade fuel. The size of the market will only support one grade. The market has already told us once that 100 octane is the common denominator. The cross section of the working fleet has not changed – the answer is still "100."

5. WHY ISN'T LYCOMING BRINGING A DIESEL ENGINE TO MARKET?

Lycoming has designed and tested various engine technologies for many years, including diesel cycle engines. Diesel-powered aircraft have their place in aviation, but our research has shown that gasoline-powered engines are less costly, more efficient and serve the general aviation mission profile better than diesel. Lycoming continues to design and test new engine technologies, but it will only bring them to market when they meet Lycoming's standards for reliability and durability, and industry expectations for overall affordability.

6. WHAT IS LYCOMING'S "FUELS STRATEGY"?

Lycoming's fuels strategy – better stated as our fuels position – is that aviation needs aviation grade fuel. We do not manufacture fuel. Our strategy on fuel is to make certain that we have engines that can run on the fuels available for aviation. We can do a lot on new engines and are doing so. However, the legacy fleet and current production aircraft need our support as well, and Lycoming is committed to providing it. Lycoming's product strategy is driven by the mission intent of the aircraft: A two-seat light sport aircraft has a vastly different purpose than a multi-seat heavy twin. These missions are themselves vastly different from aircraft that will stay aloft, sometimes for eight hours or more, performing low-power, long-loiter missions (e.g. unmanned aerial vehicles). The physics of aviation propulsion tell us gasoline-powered engines represent the best combination of initial cost, power-to-weight ratio, and running cost for general aviation.

7. WHAT FUELS ARE APPROVED TO RUN IN MY ENGINE?

Lycoming engines have been approved to run on many grades of fuel – and many engine models do not need 100LL. In fact, 91/96 unleaded fuels have been approved on many models since 1995. For an exact list, please refer to Lycoming Service Instruction 1070P, available at Lycoming.com. Note that not all aircraft Pilot's Operating Handbooks list the same approved fuels. Since the market migrated to the common 100LL solution, many aircraft list 100LL only because that has been the only fuel available.

8. CAN I USE AUTOMOTIVE GAS (MOGAS) IN MY ENGINE?

It's important to remember that ground transportation fuel is customized for ground transport – short range, low altitude operation. Automobile gasoline varies geographically and seasonally to control emissions and provide easy "start-ability." Within the USA, states regulate (and mandate) inclusion of ethanol in fuels used for "road" applications. Retail "pump gas" is not labeled well enough to know what you are buying. Technically, for some engines, automotive gas could be a solution – HOWEVER – the controls that would be required to ensure correct operation are not generally available to the retail market.

9. WHAT CAN I DO TO HELP ENSURE THE AVAILABILITY OF AVIATION GRADE FUEL?

Establishing demand for a workable solution (100UL) from the owners associations is a key first step. AOPA and EAA are already active, so let them know your preference for a 100 octane solution if you agree that it is appropriate. Several other owner associations have also formed The Clean 100 Octane Coalition. You can find out more information about this effort at 100octaneformyplane.com. Lastly, write to your U.S. Senators and U.S. Representatives; urge them to mandate a leadership role for general aviation fuels issues within the FAA. With a mandate for 100 octane fuel established, the industry avgas coalition can communicate consumer demand in well-worded legislation to fund research and mandate FAA leadership. By speaking with one voice, Lycoming is confident that general aviation can collectively find a solution for the industry.

10. CAN I OPERATE MY ENGINE "LEAN OF PEAK" (LOP)?

All engines should be operated according to the guidelines published in the Operating Handbook by the Type Certificate (TC) or Supplemental Type Certificate (STC) holder. Engines can vary widely in their operating characteristics, thus it is difficult to make blanket statements about ROP or LOP operation. Skilled and attentive pilots – in conjunction with appropriate engines and instrumentation – have shown that they can operate an engine LOP. However, inadequate or inaccurate instrumentation, or pilots distracted by other cockpit priorities can be a problematic combination when running LOP. If you have purchased an STC, equipping your aircraft with more advanced instrumentation technology to allow a wider range of operation without detriment to the engine, be certain to follow the published guidelines accompanying the STC for that equipment. Lastly, technology like Lycoming's iE^2 integrated electronic engine will make discussions about LOP or ROP a moot point – pilots will be able to simply "fly" their aircraft knowing that electronic controls are constantly adjusting fuel flow to its most efficient setting.

Find more information online:

The Need for Leaded Avgas
http://tinyurl.com/2fw7pu5

The Clean 100 Octane Coalition
http://100octaneformyplane.com

AVweb's Fuels Coverage
http://tinyurl.com/27hwpna

Chevron Global Aviation Fuels Technical Review
http://tinyurl.com/2a6fncg

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