Owner's Corner:

My Engine is Burning Excessive Oil

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A common problem I hear pilots talk about is oil consumption. They will refer to it in many ways such as; Burning oil, using oil or blow by pushing oil out the breather. Some pilots say the oil consumption is erratic and that on some flights it is excessive and other flights it is not.

To analyze this oil consumption problem you will need to investigate several areas. First make sure your method of checking your oil is the same each time or you may come up with erratic results.

Is the aircraft sitting on level ground? If not you will not get correct readings on the oil gauge. Make sure the aircraft is not leaning to one side. A low tire pressure on one side or a low oleo strut can effect the oil indication on the oil gauge. The same thing applies to the nose of the aircraft being too high or too low.

To get a consistent reading make your oil level check right after shut down while the engine is still hot or you can wait until the engine has sat long enough to be cold. Remember to be consistent when calculating oil consumption and use the same technique each time, either when the engine is hot or when it is cold. Taking one reading when the engine is hot and the next when it is cold will give erratic results.

There are three areas where you can have oil loss.
1. Leaking – That would be obvious. It will leave an oil mess on the engine. You just need to locate the origin of the leak and repair it.
2. Burning – A small amount of burning is normal but if it is excessive you will have black moist deposits in your exhaust tail pipe and you may see a bluish gray smoke coming from the tailpipe during engine operation.
3. Breather Outlet – A small amount of oil at the breather outlet is normal but if it is excessive you may see a puddle under the breather after shut down and you might also have excessive oil on the belly of the aircraft.

The most common area to find a loss of oil is from the breather outlet. Crankcase pressure is a normal results of operating a piston combustion engine. The case pressure that has built up will exit the engine through the breather tube along with vapors and any combustion deposits that get past the rings. A lot of the vapor will disperse into the air flow and be gone. Some will end up on the belly of the aircraft. If it is excessive it will run towards the tail on the belly and may even be dripping on the ground after landing.

If excessive combustion deposits get past the piston rings the oil on your oil gauge (dip stick) will turn very dark in the first few hours after an oil change and it will smell burnt. You should check the exhaust tail pipe, your engine may be burning oil. But, excessive oil coming out of the breather is quit often caused by a defective breather system and not a defective engine.

The breather line should rise, if possible, after exiting the engine. This allows some of the oil vapors to collect on the inside of the breather line and flow back to the engine. All bends in the breather line should be checked to ensure there is no reduction of the inside diameter of the line throughout the bend. Any reduction to the inside diameter of the breather line will cause an increase in case pressure and a corresponding increase in oil consumption. Also the breather line could be restricted with a buildup of sludge from condensation mixing with the oil vapors and partially clogging the breather line.

The increase in case pressure will cause an increase in the breather flow rate which will suck the oil vapors out of the engine.

To check your engine case pressure pick up a spare oil filler cap from a salvage yard and install a hose fitting through it.

Install the filler cap and attach a hose from it to an airspeed indicator or a manometer placed inside the cockpit. Run up your engine and note the gauge readings on the airspeed indicator or manometer. Test fly the aircraft and note the gauge readings at different RPM's and different flight attitudes such as climb, cruise and decent. You can refer to the TCM Service Bulletin or Lycoming Bulletin to find what they recommend your case pressure should be, but generally the low horsepower engines should not exceed 1" to 2" of water on a manometer or about 45 MPH on an airspeed indicator and high horsepower engines should not exceed 2" to 3" of water or 90 MPH.

If you see higher gauge readings you should inspect your engine breather system for restrictions. Also make sure the breather outlet is not being restricted by cowl flaps, the cowling, or being located in a high air pressure area. The best outlet location, to start with, is at the bottom edge of the firewall then adjust as needed from there.

One other thing that may help reduce oil loss out of the breather is to add an anti-siphon hole in the breather line at least 6" or higher above the lower edge of the firewall. To do this cut a slot about 1/3 of the way through the breather line then push inward slightly on the tube just above the slot. This will provide an outlet to the ambient air pressure inside the cowling and reduce any siphoning effect from the end of the breather line. Any oil film that forms on the area just above the slot will drip past the slot and down the breather tube rather that running out into the cowling area. Be careful not to push the tube in so far that it creates a restriction in the breather line.

If you have installed an air/oil separator you may be using it to compensate for a poorly maintained breather system. When inspecting a breather system that has an air/oil separator make sure the oil return line from the separator to the engine crankcase is clear and unobstructed.

With a well maintained breather system you will spend less time cleaning the belly of your aircraft.

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