Amanda Switch

In early 2011 Amanda Franklin was killed because a smoke system continued to run after an engine failure and crash feeding a post impact fire. After doing some studying of past accidents we found evidence of at least a dozen other fires in the past that where probably caused by smoke oil fires and not fuel. This and the understanding that smoke oil is a very flammable substance and we had gotten to treating it without much thought. (I ran my diesel truck for 100 miles on straight smoke oil.)

After having a conversation with John Cudahy at Sun and Fun and with encouragement from John, Dan, and Ralph we have developed and installed several different systems.

Here is a summary of the different Amanda switches I have installed

1. The simplest is the G switch from Pegasusautoracing.com. It is a simple G switch that goes into any circuit that you want to interrupt in case of impact. It is about $80 dollars and can be installed in 10 minutes depending on the application. The switch is rated at 10g's and the only false trips I have heard of are from being mounted on a sheet metal bulkhead and the vibration was setting it off. This switch is used on every aircraft for Team Aero Dynamix and they were the lead in the installation of this switch. Several of their aircraft have electric fuel pumps and they have installed G switches in these systems also.

2. Oil pressure switch. This is simply a Hobbs type switch used to require oil pressure to arm the smoke system. I have used a Summit Racing # SUMG1438 that turns on at 7 psi. I have recently switched to a VDO #230-460 that requires 60 psi to activate. This should be more than the wind milling oil pressure if the engine fails in flight. This is the first switch I developed and with the 7psi switch has shut the pump off in less than 4 seconds from engine shutdown. This has been a completely reliable installation and with the 60 psi switch should shut down the pump in the air after an engine failure.

3. EGT based system. This system is used on the Walkabout Tigers Yak 55's It uses an EGT from the Sensor Connection(#PMD2XT-RD-12-0) with an EGT probe (# EGT-EP-072-0001-SS-N). This is an EGT used on Diesel truck with a programmable warning switch installed. This switch can be set to any EGT desired and used to arm the relay in the smoke system. The advantage to this is the ability to shut down the pump after an engine failure in flight. This system and #2 should have a bypass switch installed to allow operation on the ground for service and if there is a sensor failure.

These systems have all worked and will shut down the smoke system in seconds. The installation cost is from $50 - $200 dollars and takes between :10 and several hours to install. We seem to have forgotten this and again this spring were reminded that this is a very real danger. There is no reason that any airshow aircraft with smoke system installed should be without one. This is our responsibility as performers and before we blame the CFR folks we need to do our part also.

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