CARBON MONOXIDE DETECTION

PILOT SURVEY SUMMARY
SEPTEMBER - NOVEMBER 2021

This is the first quarterly report for the year-long trial investigating how CO detectors with attention-getting capabilities (so called 'active detectors') perform over the course of a full flying season in a variety of general aviation aircraft and operating conditions. We are particularly interested in how low-cost (commercial) active CO detectors perform in the UK GA environment.

By asking GA pilots who currently fly with an active CO detector to complete monthly surveys over the course of a year, we will be able to identify potential disadvantages of carrying these devices and weigh these up against the apparent advantages. The trial is also key in determining the extent to which carbon monoxide affects UK GA.

The trial kicked off in September 2021 and has provided invaluable qualitative and quantitative data, which we have summarised here. By the end of the first quarter, we had a total of 86 registered participants, and we owe a big thank you to all those who have signed up and diligently completed the first three surveys. Your contributions are very much appreciated and will help to directly shape aviation safety in this important area.

We are keen to ensure that the monthly surveys ask the right questions and are straightforward to complete. We are grateful to the participants who have provided feedback regarding the format and content of the surveys. This has been taken on board and you will have noticed that changes have been made over the course of the first three surveys. We intend to continue with this approach of evolving the monthly surveys based on participant feedback so please do not hesitate to send us comments on the survey going forward.

86 registered participants.
80% response rate to our monthly survey.

90 individual aircraft, **32** manufacturers.
66% Certificate of Airworthiness (CofA).
33% Permit to Fly (Permit).

The five most represented aircraft types are:

CofA
- Piper PA-28
- Cessna 172
- Robin DR400
- Cessna 182
- Grumman AA-5

Permit
- Eurofox 912
- Europa XS Mono
- Ikarus C42
- Luscombe 8
- Vans RV-8 and RV-9A

Over 40% of aircraft in the trial are **41+** years old.
Other age ranges are relatively evenly distributed. Historically, CO occurrences have tended to increase with aircraft age so the fact that this trial involves a large number of older aircraft is of particular interest.

59% of participants flew between 1 and 5 times a month.
23% between 6 and 10 times.
11% between 11 to 30 times.

There are **22** different brands of active CO detector in the trial and more than **35** different models

The five most popular models in the trial are:

FireAngel CO-9D
Forensics Detectors CAR001 (TW-5IA7-GGTV)
VLOXO Z807EBCMD001BK
FireAngel CO-9X
Kidde 10LLDCO

The majority of pilots keep their CO detector attached to the instrument panel (**30%**), rear cabin - behind front seats (**14%**) or in the side pocket or side panel (**12%**)

Over 80% of participants reported **no** CO alerts in the first quarter of the trial.

There were **25** reports of CO alerts. **22** of these occurred on aircraft that were at least 31 years old. Even after adjusting for the fact that there is a greater number of older aircraft participating in the trial, the data confirms that CO alerts increase with aircraft age.

88% of respondents reported **no** safety issues related to their use of an active CO detector.

5% identified a risk of the CO detector loose in the cockpit with 3% reporting inaudibility.

We received **30** descriptions of CO occurrences from survey participants in the first three months of the trial (not necessarily resulting in an alert from their chosen detector). **16** occurrences took place on the ground whilst taxiing or performing checks. **14** reported a reading observed during flight.

The majority involved low CO levels (under 50 ppm) being recorded. There were **three** cases with greater than 50 ppm readings during flight, two of these were confirmed as exhaust related.

There were **no** reports of CO poisoning symptoms such as dizziness, headache or fatigue.

45% of respondents provided additional comments, which include valuable insights.

Some CO detectors are able to be turned on/off. Several people reported accidentally leaving them on when away from the aircraft resulting in a drained battery.

Even if relatively low CO levels are observed, the detectors are prompting people to investigate possible CO sources on their aircraft.

Several participants indicated that they carry a backup CO detector with them while flying.

Some participants have included a functional check of their CO detector as part of their pre-departure checks.

CO occurrences are more common in the colder months due to the increased use of cabin heater systems. Continual data gathering is critical and we thank our survey trial participants as they complete the monthly surveys.