



Safety recommendation no. 499

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Safety deficit	On 6th June 2013, a collision occurred between a glider and a motorised aircraft in the Auenstein area. The glider was fitted with a Flarm collision warning system and the motorised aircraft was fitted with a Mode S transponder. The safety deficit generally concerns all aircraft categories and was determined based on several investigations from the last few years. These show that airproxes and collisions between aircraft occurred time and again. The meaning and limits of the 'see and avoid' principle were generally unknown to the transport users. The use of 'see and avoid' without technical support could not prevent airproxes and, in particular cases, collisions. The majority of aircraft were not fitted with collision warning systems. In addition, the collision warning systems installed were not mutually compatible. In the present case, the glider fitted with a Flarm could not receive the signal from the motorised aircraft's Mode S transponder.
Safety recommendation	In collaboration with the stakeholders and the European Aviation Safety Agency (EASA), the Federal Office of Civil Aviation (FOCA) should develop a concept for introducing compatible collision warning systems for general aviation that are based on international civil aviation standards as well as create and enact a plan of action for short-term, medium-term and long-term implementation.
Addressees	BAZL Bundesamt für Zivilluftfahrt; EASA Europäische Agentur für Flugsicherheit; EASA Europäische Agentur für Flugsicherheit; BAZL Bundesamt für Zivilluftfahrt
Stage of the implementation	Partially implemented. In a letter dated 9th May 2016, FOCA advised that it fundamentally agrees with the safety recommendations and makes the following statement: in collaboration with the Aero-Club, FOCA will raise awareness among owners and pilots of motorised aircraft that they should equip motorised aircraft with collision warning devices (Power Flarm). In a letter dated 27th April 2016, the EASA advised that it is investigating this topic and has published the corresponding study EASA.2011.07. This study concluded that collision warning devices of this kind should be lightweight, inexpensive and compatible. The EASA accordingly recommended developing a technical standard for collision warning devices for general aviation. Various systems are already available and are widely used. The EASA has encouraged the installation of one of these systems (Flarm) and makes the corresponding directives available so that this device can be fitted as a standard change. The EASA is continuously monitoring the development of further solutions and has begun another internal study to evaluate other measures.

In a letter dated 23 May 2016, the FOCA stated that the procedure defined below included the results of the EASA.2011/07 research project:

Procedure SHORT TERM (1 year)

Definition of campaigns for the attention of the stakeholders.

Possible solution:

a. Information campaign to promote understanding of anti-collision systems

Ex: ACAS not compatible with FLARM

b. Information campaign: See and avoid requires active "scanning".

Ex: The human eye can detect an aircraft about 3NM away. If you travel with 120 kt (2 NM/min) you can only "see" 90 sec ahead.

Target group: Associations, associated stakeholders, as well as various interest groups and authorities.

Goal: create understanding through training (e.g. Internet/EGAST flyer)

Status: in progress

Procedure MID TERM (5 years)

Introduction of new regulations for the installation of FLARM according to CS STAN

Possible solution: CS-SC051a in CS-STAN Issue 1 dated 8 July 2015 incl. Annex II Aircraft

Target group: Aircraft operators

Goal: Enable situational awareness through technical solutions

Status: in progress

Introduction of voluntary installation of technical solutions

Possible solution: Promote voluntary installations

Example: "Pulse Light" landing light LED headlights for engine-powered aircraft

Target group: Aircraft operators

Goal: see and avoid by means of technical solution

Status: Open

Procedure LONG TERM (10 years)

Proactive interaction of FOCA working group with EUROCAE / Eurocontrol for new ETSO standard.

Possible solution:

E.g. a transponder based only on ADS-B without Mode S, i.e. less power requirement, cheaper but higher accuracy (currently seen in the RPAS industry).

Reference: TSO-C199 Traffic Awareness Beacon System (TABS)

Target group: international authorities / EUROCAE / Eurocontrol

Objective: Definition of ETSO standard and proactive implementation of adapted legislation

Status: Open

In a letter dated 28th April 2017, EASA informed to be in the process of publishing European Technical Standard Orders (ETSO) for Traffic Awareness Beacon System (TABS) including several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions. EASA recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the "see and avoid" principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor. The European Plan for Aviation Safety (EPAS) already addressed the issue under the umbrella of the safety topic "general aviation safety". The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area

