



EUROPEAN HANG GLIDING AND PARAGLIDING UNION

Position Paper - Electronic Conspicuity through mobile telephony.

The EHPU consists of the national hang gliding and paragliding associations of 22 European countries, and represents over 110,000 hang glider and paraglider pilots.

Summary:

The EHPU acknowledges the benefits that EC broadcasts may bring to aircraft and to Uncrewed Aerial Systems (UAS) operators in U space designated airspace, by allowing the UAS to detect and manoeuvre around crewed aircraft to reduce risk or disruption to the crewed aircraft. EHPU does not support mandatory EC equipage for all crewed aircraft in all categories of airspace. It supports consensual adoption using a range of technologies and platforms that meet needs particular to the aircraft type and use.

The EHPU supports the premise that mobile telephony through the “smart phone” represents a potential EC solution most appropriate to the requirements of hang gliders and paragliders, given the sports’ unique lightweight nature amongst General Aviation, and the extent and diversity of HG and PG flight operations around Europe.

1.0 Background.

1.1 European Pilot numbers and general information:

1.2 Hang gliders and paragliders make up a substantial portion of General Aviation (GA). In at least one EHPU member state, one quarter of GA operators are hang glider or paraglider pilots. In countries such as Germany and Switzerland, they represent the largest group of crewed airports by far. EASA has stated that it recognises that over 50% of airborne traffic in Alpine regions are hang gliders and paragliders. EHPU considers this percentage to be an underestimate, because a significant proportion of hang glider and paraglider flights are not uploaded to flight record platforms in the public domain.

1.3 Hang gliding and paragliding are inexpensive forms of flight. Syndicate ownership is unknown in this field of aviation, and every hang glider and paraglider pilot owns at least one aircraft. There is a strong second-hand market and an aircraft can be purchased for less than €1000.

1.4 In many European countries flight training on hang gliders and paragliders falls outside national pilot licensing requirements. Registration on national aircraft databases is not required for the majority of EHPU member countries.

2.0 Areas of flight operation.

2.1 Hang gliders and paragliders are not limited to operating from airfields. They operate anywhere in the open FIR. They can be foot-launched from hills, windward cliffs and mountains. They can be towed into the air, either by a ground-based winch or by a microlight.

2.2 Hang gliders and paragliders are cockpit-less aircraft and do not routinely carry radios nor have licences in place to talk to flight management ground stations.

2.3 Hang glider and paraglider pilots fly in VMC using the principle of 'see and avoid', and it is well established that the greatest mid-air collision risk is another hang glider or paraglider. However, records show that these occurrences are very rare.

3.0 Specifics of hang glider and paraglider flight.

3.1 Flights take place from ground level to cloudbase and unpowered flights of hundreds of kilometres are regularly made.

3.2 Hang gliders and paragliders do not fly in straight lines - flight plans are largely dictated by the ever-changing local meteorological conditions. Because of their ability to land in extremely confined areas, pilots can recover to soaring flight from very low altitudes. Recoveries to cloudbase of several thousand metres are frequently made from lower than 100 metres above the ground.

3.3 Because of their low speed, hang gliders and paragliders fly in close proximity to each other. It is not uncommon for 50 hang gliders and paragliders to be found in one thermal or soaring a ridge (see photo on page 3 as an example).

3.4 There are many types of flight practised by hang glider and paraglider pilots. Local flights may utilise ridge or thermic lift (or a combination of both) to extend the flight duration. High densities of hang gliders and paragliders can be found soaring windward ridges, from ground level to cloudbase. Cross country flights involve using rising air to sustain flight, and flights of many hundreds of kilometres can be made flying from thermal to thermal, with lightweight electronic instruments (often worn by the pilot) providing assistance to navigation. Pilots may hike to remote take-off locations to undertake flights hugging the terrain, or to commence a cross country flight. The worldwide popularity of the Red Bull X-Alps international competition¹ has spawned a huge interest in "hike and fly" where paragliding is combined with walking, and has brought about lightweight and compact flying equipment designed especially for access to more remote flying locations.

3.5 As the aircraft (particularly paragliders) are extremely portable, flying tourism thrives across Europe and is a significant growth area of the sport.

3.6 Hang gliders and paragliders may be equipped with motors and foot launched or wheel launched in many European states, to make flights using power as a method of flight assist to get to cloudbase, or fully under power.

4.0 EC and hang gliders and paragliders – an EHPU perspective.

4.1 There is no transponder or ADS-B device currently on the market that has been demonstrated to be fully compatible with hang gliders and paragliders, which is proportional to the low relative cost of our aircraft. Trials of a CAP 1391² device (based on ADS-B) with internal batteries and aerial in UK revealed significant signal obscuration by the bodies of paraglider pilots and a limited detection range in many normal paragliding environments.

4.2 Hang gliders and paragliders would gain little benefit from a visual EC receive function for collision avoidance. A screen would distract from the 'see and avoid' employed in the proximities in which they fly with each other. A simple broadcast only device would be appropriate given their low speed and relative lack of manoeuvrability if deconflicting with a faster moving powered aircraft.

¹ X Alps (Red Bull) first launched in 2003. All the equipment for the 1200km course is carried by the athlete either on foot or with their paraglider.

² CAP 1391: UK CAA technical specification promoting "see – *be seen* – and avoid" that resulted in a 'low cost and complexity' limited capability device using ADS-B protocol. Many were purchased through a state scheme funding substantial portion of the cost (up to 50%) via rebate.

- 4.3 Given the low speed of hang gliders and paragliders, Electronic Conspicuity provides no opportunity for the hang glider or paraglider pilot to take any action to avoid a collision with a faster moving aircraft.
- 4.4 Foot-launched hang gliding and paragliding is usually undertaken independently, without the need of any infrastructure such as launch coordination, ATC radio direction and traffic services. Enforcement and control would be challenging to introduce and costly to maintain. The adoption of EC must therefore be consensual, low-cost and frictionless.

5.0 Potentially suitable EC equipment.

- 5.1 It must be accepted that for hang gliders and paragliders, EC is entirely passive, i.e., the hang glider / paraglider pilot does not use it to avoid others, only to allow other aircraft types (crewed or uncrewed) to detect and manoeuvre around the hang glider / paraglider.
- 5.2 The EHPU sees internet-based EC as a viable solution for its pilots. It is global and bidirectional; it is free of cost constraints and signal obscuration issues evident from other technologies. Internet-based EC is not limited to delivery through ground-based mobile networks.
- 5.3 The majority of European hang glider and paraglider pilots carry internet and GPS equipped mobile 'phones. Many already use their 'phones to run apps that provide flight information, navigation, and real time position awareness³. They are therefore already adapted to pilots' culture and flight practices, and can be easily fitted to our aircraft.
- 5.4 EHPU is of the opinion that EC equipment designed specifically for aerial use does not provide sufficient flexibility for a smooth assimilation in the free flight community; rather, it is imperative that generic mobile devices, specifically the smartphone, be explicitly accepted for EC by paraglider and hang glider pilots.
- 5.5 The EHPU supports further trials, research, and technical proposals to advance internet-based mobile smartphone-based EC solutions for its member states' pilots to access to U space designated airspace.



Above: paragliders taking part in a national competition, using 'see and avoid' to deconflict.

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³ The "SafeSky" App has over 3000 HG and PG users across European states.