

APPENDIX 1

The significant comments to append to the PKBWL Final Report on the accident to the Gyrocopter TERCEL, SP-XERO Occurrence No – 2021/1048

1. General

The Air Accidents Investigation Institute (AII) of the Czech Republic received the transmittal letter inviting it to make comments to the Draft Final Report into the accident to the Gyrocopter TERCEL, reg. SP-XERO, which occurred on 9 May 2021.

The KAŠPAR A SYNOVÉ – STROJÍRNA KALMAR, s.r.o (hereinafter referred to as the Manufacturer) is the manufacturer of the KA-2/3-LT propeller (hereinafter referred to as the "Propeller"), which was used on the gyrocopter involving in the accident, and according to the Draft Final Report, one of the three propeller blades separated during the flight. Therefore, the investigation places particular emphasis in the Draft Final Report on the design of the Propeller.

The AII invited the Manufacturer to comment on the Draft Final Report.

The Manufacturer has submitted its comments in writing, stating that it does not agree with the conclusions of the Draft Final Report in its entirety.

2. Comments

To the Part 14. Course and analysis of occurrence

14.2. Findings – Table 2

The Draft Final Report references (*Table 2. Occurrences that involved damaged Kašpar propellers*) the Tecnam P92 ECHO incident of 7 June 2020, Ref. 2020/1368, when the ultralight aircraft featured the Manufacturer's propeller, i.e. Kašpar Ka-4 (hereinafter only the "Incident").

The manufacturer has clearly proven the Incident was clearly caused by an unsuitable engine, causing the Incident described in the Report. In this case, the pilot of the Tecnam P92 ECHO aircraft used the mentioned propeller together with a completely different engine type, contrary to the Manufacturer's warnings and recommended engine specification in relation to the given propeller.

The Manufacturer claims that the short-term and long-term experiences with its propellers installed both in the front and rear aircraft sections are positive. In reference of that, the Manufacturer completely rejects any claim that its manufactured propellers (or other parts) feature any systemic defect that would autonomously cause the Incident (or any other incidents).

14.2. Findings - text on pages 7 - 16

The Manufacturer does not agree with the Draft Final Report conclusions. According to the Manufacturer's opinion, the accident was caused neither by (i) the material that is allegedly unsuitable for manufacturing, nor by the (ii) allegedly unsuitable propeller blade bearing part.

The aforementioned conclusions in the Draft Final Report are totally in conflict with the Propeller strength inspection completed in line with the requirement of the Light Aircraft Association of the Czech Republic “*UL 2 – Part I, Sports aircraft airworthiness requirements, Aerodynamically controlled ultralight aircraft, 2019*”, while the necessary certification is attached as Appendix 2.

In addition to the aforementioned mandatory inspection, the Manufacturer completed the frequency inspection of the Propeller blade tuning. Following this inspection, the Czech Aerospace Research Centre issued its report on the measurement of the frequencies of the new KA-2 propeller blade with its adjusted laminate coating reinforcement composition and initial evaluation of potential resonances while operated with the Rotax 912 engine with both reduction gears ZKLV-2013-118 of 28 February 2013. The Centre’s report clearly states as follows: “The tested blade’s tuning is positive against the known exciting effects within the band of common operating speeds.” (for more details, see Appendix 3).

To the part 15. Causes of the Accident

Considering the aforementioned facts, the Manufacturer believes and claims that the accident was caused by the frequency load of the Propeller blade bearings due to the Propeller’s operating aerodynamic conditions and the gyrocopter design in general.

To the part 16. Safety recommendations – Z-1/2021/1048

Since the Manufacturer does not agree with the Draft Final Report conclusions, the Manufacturer logically does not agree with the safety recommendation either.

If the final wording of the Draft Final Report features any conclusions and recommendation in conflict with these comments of the Manufacturer, then the Manufacturer kindly requests the clear definition of the Propeller design requirements, which are to be met by the new technical solution. The Manufacturer will take this safety recommendation into consideration during its subsequent improvement of its products. The Manufacturer also kindly mentions that the safety recommendation specified in the final wording of the Draft Final Report should also reach specific sports aircraft manufacturers in terms of a specific installation including the Propeller.

3. In conclusion

First of all, the Manufacturer summarizes that the long-term experiences clearly prove that the Manufacturer’s propellers (or other products) are flawless, made of suitable material, and feature suitable designs.

The Manufacturer has met all the mandatory requirements for the manufacturing of the Propeller per the laws of the Czech Republic and also voluntarily completed its own frequency tests of its Propeller blades tuning.

The Manufacturer does not agree with the safety recommendation. If this recommendation was to be accepted, it would have to include specific requirements to be met by a new technical solution. The Manufacturer will take this recommendation into consideration during its subsequent improvement of its products.

The Manufacturer states that further PKBWL safety recommendations should also always concern a specific sports aircraft manufacturer in relation to a specific installation including the Propeller. An opposite approach would lead to a conflict of aviation agencies (or other involved bodies), not only on the EU territory.