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Office of Aviation Safety

Date: October 31, 2023
Subject: CEN23FA391 - Manufacturer Comments
Contact: Tobias Morsel - Design - Alexander Schleicher GmbH & Co

A request for manufacturer assistance was sent out to the German BFU and the glider manufacture Alexander Schleicher GmbH & Co. This memo is a copy of several emails received from the company regarding questions related to engine design, usage, and aerodynamic considerations. Additionally, assistance in understanding the flight path at impact was also posed to the company. The emails are copied in order sent and received.

Good Evening,

I am an accident investigator for the National Transportation Safety Board investigating a fatal accident of an Alexander Schleicher GmbH & Co , ASH 26E in Wellington, Colorado on August 31, 2023. I am reaching out to see if there is someone, I may speak with that is familiar with the flight characteristics of the glider in different flight control configurations.

Thanks for your time and I look forward to your response.

Thanks,

Andrew Finne
Aviation Safety
Air Safety Investigator - CEN Region

Dear Mr. Finne,

I was pleased by our CEO to contact you regarding your question on the ASH 26 E and it's flight characteristics. I am one of the design engineers here in the design office and fly private a ASH 26 E, so I hope I can help you with your investigation! What would you like to know? Is there special focus on something?

If you think it's easier to discuss it on phone you can reach me under **(redacted)** We are normally from 5:00 AM to 2:00 PM UTC (beginning from next week 6:00 AM to 3:00 PM UTC) in the office.

Best regards,

Tobias Mörsel

Tobias,

Thank you for your response!

We are looking into what the flight characteristics are if the propeller and shaft remain in the cool down 45° position with the propeller in a non-stowed position, e.g. perpendicular to the airframe.

Also, according to the transmitted IGC File the pilot appeared to be setting up to land out which in a motor glider is unusual. The flaps and ailerons were in the landing configuration and the last data point shows an airspeed of around 58 knots about 200' AGL. However, the glider impacted terrain in a almost a vertical dive with significant energy which we are currently at a loss to explain. The glider impacted with enough energy to crush the fuselage to the wings and then bounce the glider backwards about 15 feet. Would a stall/spin from 200' create this circumstance?

Thanks,

Andrew Finne
Aviation Safety
Air Safety Investigator – CEN Region

Hi Andrew,

the combination of partly retracted engine (cool down position) and a not vertical aligned propeller is very unusual so that I have no personal experience with it. However, in general the (fully) extended propeller pylon has only a very marginal effect on the flight characteristics. Control forces, stall warning and stall behaviour are nearly the same as with engine retracted. When the propeller pylon is in the cooling position there is no more effect on the aircraft characteristics noticeable. I assume that the propeller is in the downstream wake of the fuselage so that there is no big difference in the flow conditions for the vertical tail. The horizontal tail is definitely above the influence zone of the partly retracted position. Therefore I would assume that also the combination of pylon in 45° position and propeller vertical to the fuselage will not have significant effects on the flight characteristics.

Even if it is not usual to perform an outlanding with a motor glider there is in general no difference to an outlanding with a pure glider. Unfortunately a high number of motor glider pilots is not aware that an outlanding can occur and does not do special trainings for that. However, the described landing setting is suitable for an outlanding, The airspeed of 58 knots in 200 ft about the field is very well and offers enough margin for a safe operation. Stalling speed in landing configuration would be between 38 knots and 41 knots depending on the actual weight and the C.G.-position. The loss of altitude after a wing drop or stall will be approximately 100 to 200 ft depending on the C.G.-position and the dynamic of the process / reaction of the pilot. This altitude values contains the recover process until horizontal flight is gained again. So, if the pilot does not react soon or gives the wrong inputs it is very likely that the aircraft is in a nearly vertical flight path when being at ground level. The energy when coming from 100-200 ft is very high so that the total damage of the cockpit complies with this scenario. I have no experience which energy is necessary to bounce the aircraft backward after the impact but I can imagine that the elastic fibre material of the cockpit can transform the impact energy to a noticeable movement of the wrackage.

I hope the information can help you for your investigation. Feel free to contact me if you need additional information or something else.

Have a nice day,

Tobias

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