



Safety recommendation no. 554

Date of the publication	17.06.2019
Number of the final report	2390
Safety deficit	<p>About one minute after take-off at the University of Zurich (UZH) Irchel, the M2 V9 drone automatically triggered the flight termination system (FTS) and initiated an emergency descent with a parachute. After ejecting the parachute, the connecting rope broke and the drone hit the forest floor without deceleration and was destroyed.</p> <p>After the emergency parachute was deployed, the acoustic warning signal was not heard by people not far from the crash site, which meant that the purpose of warning third parties on the ground was not fulfilled.</p> <p>As the investigation showed, the value of the drone's impact energy was significantly higher than the value of 80 J used in practice to date, regardless of its load.</p>
Safety recommendation	The Federal Office of Civil Aviation (FOCA) should take appropriate measures to ensure that the acoustic warning signal can be heard by third parties on the ground when an emergency landing is initiated.
Addressees	BAZL Bundesamt für Zivilluftfahrt
Stage of the implementation	<p>By letter dated 19 September 2019, the FOCA provided the following information:</p> <p>«The FOCA partially agrees with Safety Recommendation No. 554. The idea of the acoustic warning signal is to warn any persons near or under the drone landing on the parachute in the event of an emergency landing with a parachute. This is an additional safety measure to the parachute. Warning people in case of a 'free fall' was never the intention. Matternet has decided on its own initiative to amplify the acoustic signal.»</p> <p>The FOCA's argumentation is not entirely conclusive as a successful warning of third parties on the ground in the event of an emergency landing is ultimately a question of sound strength and less of speed of fall. In view of the initiative of the manufacturer and operator of the drone, the safety recommendation was considered to have been partially implemented.</p>
Investigation report concerning the safety recommendation	<p>Zwischenbericht Schlussbericht Final report Vorbericht</p>