Safety recommendation no. 503

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Safety deficit	On 13th July 2013, a flight instructor and a trainee pilot carried out a training flight with a Cabri G2 helicopter. Whilst completing landing exercises, the crew heard a loud noise which was followed by the development of an odour. Together with a mechanic, they carried out in-depth inspections in open terrain. The parties involved saw the loose power supply unit for the strobe light in a recess next to the main rotor transmission and the singed surface coating of the foam air filter in close proximity to the exhaust as possible explanations for what had been noticed during the flight. During the subsequent flight back, which took 10 minutes, the odour developed again, followed by smoke coming from the engine bay. The flight instructor immediately initiated a precautionary landing. In the process, the cooling fan of the air cooling system disintegrated and caused further collateral damage in the engine bay and engine failure. Subsequently, the crew successfully carried out an autorotation. The investigation showed that the failure of the cooling fan could be attributed to fatigue in the material, inadequate constructive design and the material not complying with the required specifications. It also became clear that the service bulletins which had been published by the manufacturer were not sufficient to guarantee safe operation.
Safety recommendation	The European Aviation Safety Agency (EASA) should ensure that the manufacturer Hélicoptères Guimbal undertakes appropriate measures to prevent the occurrence of a disintegration of the cooling fan in the cooling system of Cabri G2 helicopters.
Addressees	EASA Europäische Agentur für Flugsicherheit
Stage of the implementation	Implemented. The manufacturer Hélicoptères Guimbal adapted the production process for the front disc of the cooling fan to achieve an even material thickness and reduce residual tension in the material. In addition, the number of mounting points was doubled and new screws were used. The modified version has been installed in new helicopters since the end of 2015. The inspection requirements outlined in the airworthiness directive remain unchanged. Hélicoptères Guimbal also developed a front disc made from composite material. This was approved by the EASA in July 2016 and has been available for retro-fitting to the existing fleet since September 2016.
Investigation report concerning the safety recommendation	Schlussbericht Final report

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