

Engine shut down on initial climb, emergency landing

Aircraft	Dyn-Aéro MCR "Sportster" registered HB-YKY
Date and time	4 May 2016 about 16h30 ⁽¹⁾
Operator	Private
Place	Dommartin (25)
Type of flight	General aviation
Persons on board	Pilot
Consequences and damage	Pilot slightly injured, aeroplane seriously damaged

⁽¹⁾Except where otherwise indicated, times in this report are local. Two hours should be subtracted to obtain UTC.

This is a courtesy translation by the BEA of the Final Report on the Safety Investigation. As accurate as the translation may be, the original text in French is the work of reference.

1 – HISTORY OF FLIGHT

The pilot, who was in charge of the maintenance workshop, took off from Pontarlier (25) aerodrome heading for Neuchâtel (Switzerland) aerodrome. The purpose of the flight was to return the aeroplane to its Swiss owner after a maintenance operation on the oil circuit (an error in the oil temperature display).

Climbing through about 300 ft, the pilot noted a loss of power and then the engine shut down. He applied the associated emergency procedure and tried unsuccessfully to restart the engine. He extended the flaps to 25 degrees and performed an emergency landing in a field, in a very steep area. The landing was hard. The pilot evacuated the aeroplane on his own.

2 - ADDITIONAL INFORMATION

2.1 Pilot Information

The 33-year old pilot has held a PPL(A) licence since 11 December 2007 and a multi-axe microlight private pilot's licence since 30 May 2014.

He had a total of 360 flying hours including 230 on type and eight flying hours in the previous three months including three on type.

2.2 Site and Wreckage Examination

The aeroplane had stopped within a few metres. The front landing gear had been torn off and the main landing gear broken off.

The flight controls were continuous and functional.

Damage to the propeller appeared to be consistent with the absence of any significant torque at the time of impact with the ground.

No anomaly was observed in the engine operations. However, a significant amount of water was noted in the fuel tank, in both carburettors and the electric pump.



Fuel and water recovered from the left carburettor bowl



Fuel and water recovered from the right carburettor bowl

2.3 Fuel tank

HB-YKY had been constructed from a full kit and was completed on 15 July 2003. A metal fuel tank, manufactured by a German company, was installed on 7 March 2006 to replace the aeroplane manufacturer's moulded composite tank which had some leaks.

The tank manufacturer indicated that it had not contacted the aeroplane manufacturer for approval. The Swiss authorities did however approve the tank. The approval report did not mention any restriction or anomaly.

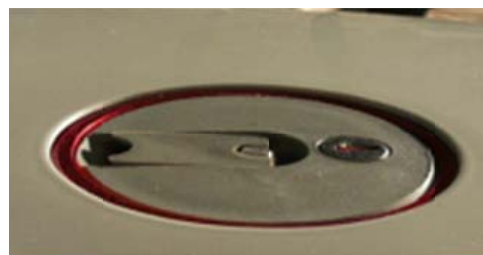
Five other identical tanks were manufactured for Swiss and German owners.

The German authorities indicated that this tank was not certified and required a provisional pass.

In relation to the engine casing, the HB-YKY tank cap is about three centimetres lower than the manufacturer's standard assembly.

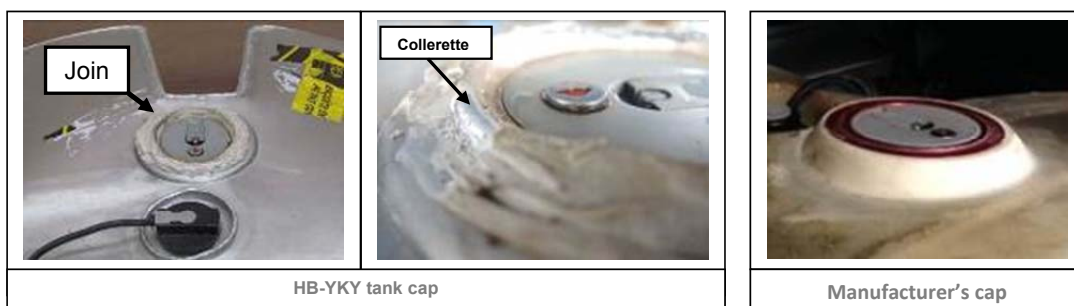


Position of HB-YKY tank cap



Position of the cap as envisaged by the manufacturer

This discrepancy, associated with a collar and a sealing ring, created a sealed bowl between the tank and the casing, around the cap.



Tests carried out after the accident showed that this bowl made it possible for a quantity of about 25 ml of water to be retained, and that this water could penetrate the tank around the cap seating lock at a flow rate of about 15 ml per minute.

2.4 Testimonies

The pilot indicated that it had rained in the days preceding the flight and that he had not been able to put the aeroplane into its hangar. During the pre-flight check, he carried out the usual checking actions but did not purge the fuel tank.

The aeroplane owner added that he usually systematically put his aeroplane in a hangar after each flight.

3 - LESSONS LEARNED AND CONCLUSION

The distinctive feature of the tank and its assembly, with an area of retention around the cap, made it possible for the rainwater that had fallen in the days preceding the flight to accumulate and enter the fuel tank. This considerable presence of water in the fuel circuit led to the engine shut down.

The lack of a purge of the fuel tank before the flight did not enable this water to be evacuated.

The absence of approval of the fuel tank by the aeroplane manufacturer may have contributed to the occurrence of this accident.

The Swiss and German investigation authorities were informed that this metal tank made water infiltration possible via the tank cap. They were requested to inform the owners of aeroplanes equipped with this tank.