The sole objective of safety investigations is the prevention of future accidents and incidents.

The Commission does not apportion blame or liability. The investigation is independent and separate from any judicial and administrative proceedings.

Any use of the Resolution for any purpose other than the prevention of aviation accidents and incidents may lead to wrong conclusions and interpretations.

RESOLUTION

of the State Commission on Aircraft Accidents

of 28 January 2026

regarding the aviation incident

2025-0001

OCCURRENCE NUMBER

Tecnam P2006T, SP-SUT
17.02.2025, Gliwice

This Resolution was issued by the State Commission on Aircraft Accidents Investigation on the basis of information available on the date of its issue.

This Resolution presents the circumstances of the aviation occurrence concerned, as well as its causes, contributing factors and safety recommendations, if issued.

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Having analysed the documents submitted to the PKBWL, acting on the basis of Article 135 of the Act of 3 July 2002 – Aviation Law (Journal of Laws 2025, item 1431, as amended) and § 18 of the Regulation of the Minister for Transport of 18 January 2007 on Air Accidents and Incidents (Journal of Laws 2017, item 1995), the Commission found the investigation results presented in the investigator's final report to be sufficient and decided to close the investigation.

1. Course of the events:

On 17 February 2025, the crew of the Tecnam P2006T SP-SUT aircraft, performing a training flight for the professional licence, notified AFIS EPGL of an urgent return to EPGL airport due to problems with the right engine.

At around 9.52 a.m.,[1] while flying over Gliwice, the right engine started to malfunction. The crew observed unstable readings on the right engine tachometer, which was showing alternating dips and rises. In this situation, the instructor decided to turn back towards the EPGL airport and prepare for landing. During the approach, after the flight has been stabilised, the instrument readings returned to normal. In this situation, the instructor changed the decision. The crew aborted the approach, intending to continue with the originally planned task (flight in the vicinity of the airport to familiarise with the aircraft). However, already during the climb, at around 9.57 a.m., unstable right engine RPM readings occurred again. In addition, the crew noticed that the fuel gauge of the right tank was showing zero. In this situation, the instructor again decided to abort the task and return to the EPGL airport.

At 10.03 a.m., the crew informed the AFIS officer of the EPGL airport that they needed to land immediately. The AFIS advised that RWY 08R was available. The flight crew reported the emergency without requesting the assistance of the emergency services. During the landing approach, the right engine was idling, which was in accordance with the emergency procedures provided in the AFM for the Tecnam P2006T. The left engine functioned normally. The landing took place at 10.06 a.m., with no repercussions.

[1] All times in the resolution are in LMT. On the day of the occurrence, LMT was UTC + 1h

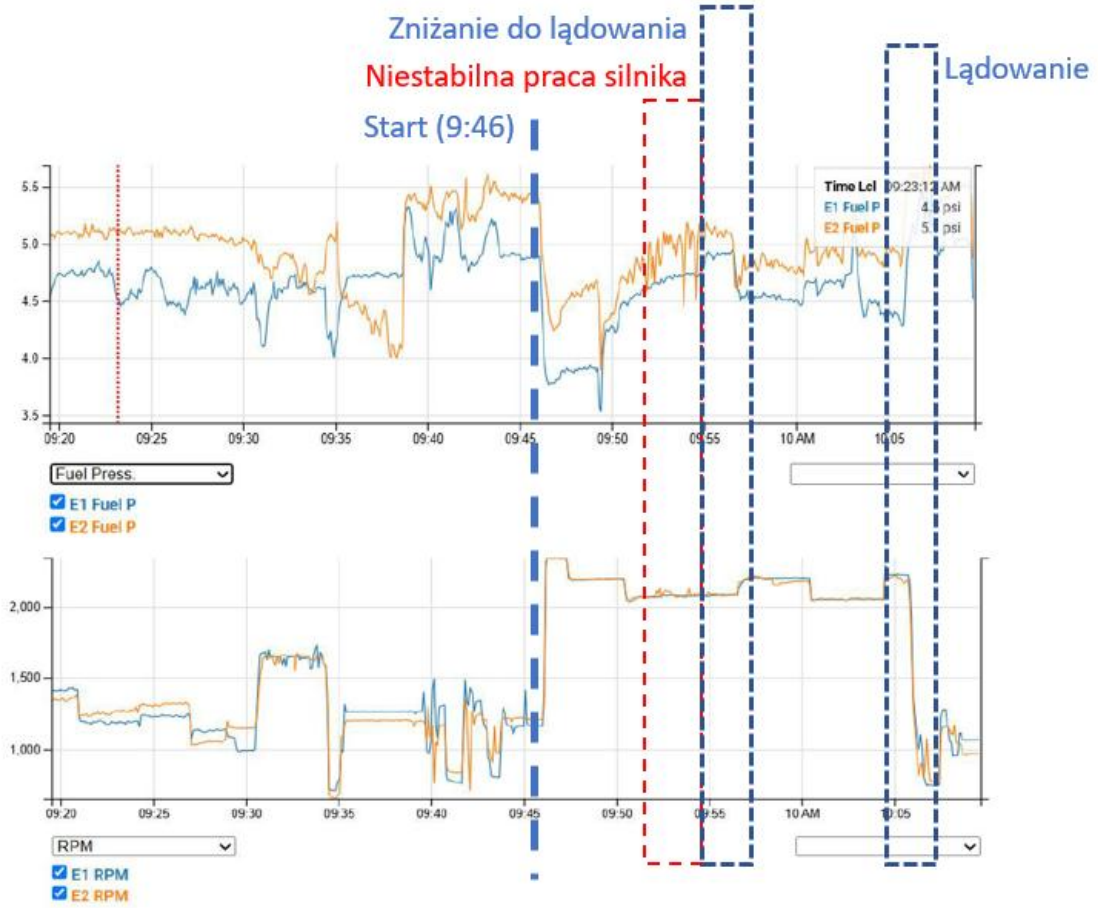

Figure 1. Engine performance parameters: fuel pressure (top graph) and RPM (bottom graph), recorded by the Garmin G1000 system [source: user]

The Tecnam P2006T aircraft is powered by two Rotax 912 S3-01 engines (with carburettor fuel supply). The service life of each engine is 2,000 hours. At the time of the occurrence, the total operating time of the engines since new (TSN) was 1,197 hours for the left engine and 1209 hours for the right engine. The airframe had a total of 1,141 flight hours (FH). The engines were installed on the airframe at the factory and were not replaced. The last maintenance at the 100 FH level was carried out on 14 November 2024, at a total time on airframe of 1,101 FH. There were 59 FH remaining for the next inspection (100 FH).

The aircraft was fuelled with the automotive 98-octane petrol. Such fuel was used regularly by the user.

After the occurrence, the visual inspection of the aircraft was performed, revealing a burned-out exhaust valve of the right-engine cylinder no. 2. In addition, the fuel level sensor of the right tank was found to be malfunctioning. This fault caused erroneous readings of the fuel gauge. This was not linked to the engine malfunction – the tank was filled with fuel during the flight.

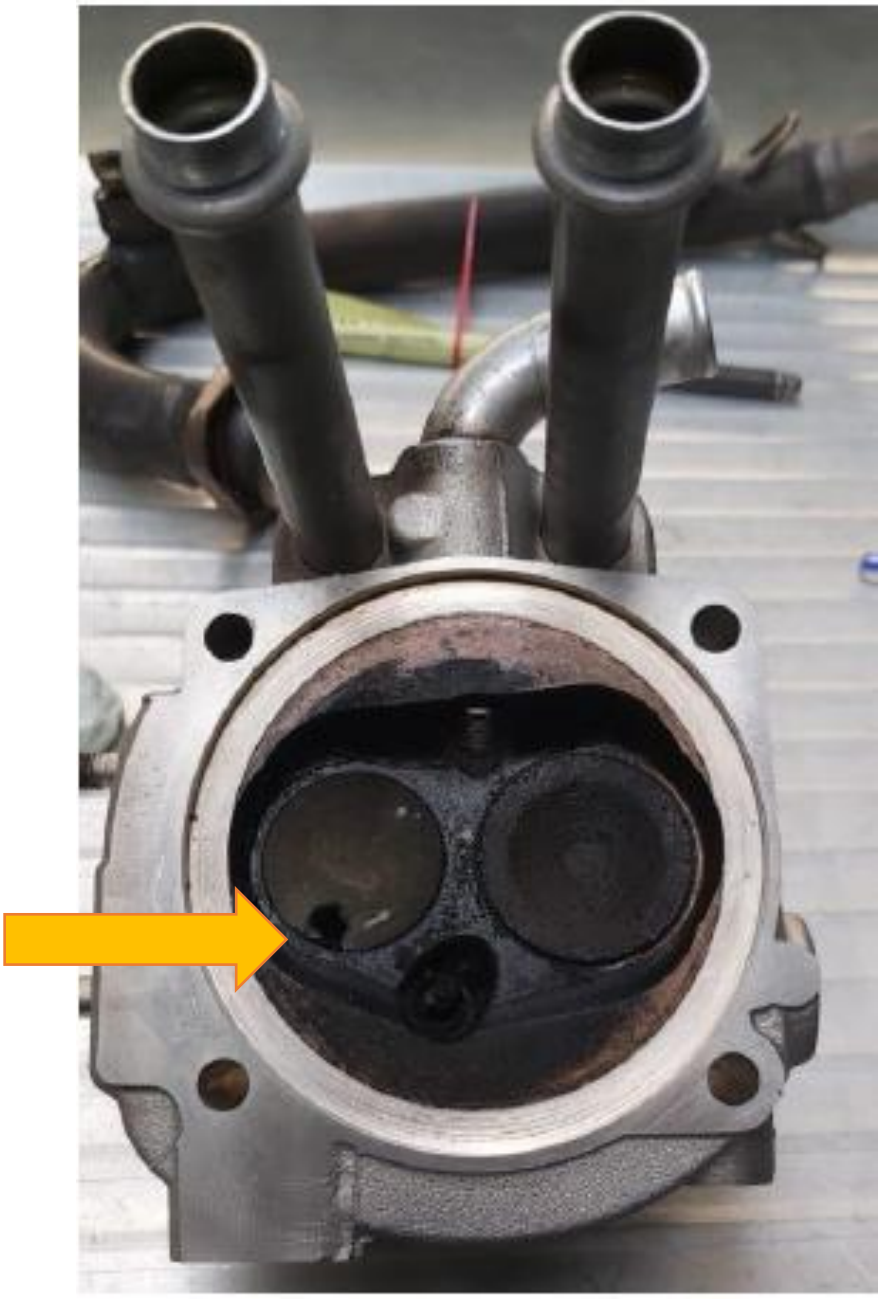

Fig. 1. Head of the right-engine cylinder no. 2. Visible burnout of the exhaust valve.

2. Causes and contributing factors

The unstable operation of the engine was caused by pressure fluctuations in cylinder no. 2, which occurred after the exhaust valve had burned out. Presumably, this fault was due to the exhaust gas temperature (EGT) being too high during engine operation. The operation of the valves under such conditions led to excessive oxidation of the valve material and, ultimately, to valve burnout.

As there was no EGT monitoring sensor, the crews operating the aircraft were unable to control the performance of the power unit in an optimal manner.

3. The Commission accepts the following preventive actions proposed and implemented by the investigator:

- the exhaust and intake valves in the head of the right-engine cylinder no. 2 were replaced;
- the fuel level sensor for the fuel gauge on the right tank was replaced;
- the maintenance organization was instructed to carefully monitor the level of carbon deposits in the cylinders, including to inspect valve condition during scheduled maintenance;
- the condition of the valves on the left engine (not damaged) was verified.

Commission's comments

The occurrence in question is one of a number of engine valve burnouts on a Tecnam P2006T aircraft. Rotax has recorded 13 reports of such incidents on aircraft of this type over the past five years. The reasons identified in these reports are as follows:

- insufficient heat transfer at the valve seat (2 cases);
- overheating, presumably due to knocking (5 cases);
- corrosion due to hot gases (1 case);
- valve breakage due to poor bleeding of the oil system (1 case);
- unspecified (4 cases).

On the basis of the information as collected, it is possible to observe the trend in the occurrence of faults during the operation of Rotax engines on Tecnam P2006T aircraft used in training, particularly when training for multi-engine aircraft. The intensive operation of heavily loaded power units (numerous take-offs, flights with one engine shut down) in combination with the engine installation conditions (a massive propeller, a long exhaust manifold for the front cylinders) generates variable and high thermal stresses in the valve systems. The majority of such incidents occurred at TT between 1,000 and 1,500 FH, but failures before 1,000 hours were also reported. The aircraft manufacturer is known to have made some modifications, including the reconfiguration of the exhaust system or monitoring the temperature in the airbox. Further, the engine manufacturer introduced a change in valve material (so-called sodium-filled valves), which reduced the number of valve burnouts, but increased the likelihood of piston crown burnouts. The impact of fuel quality (especially in the context of increasing the proportion of bio-components to 10%) on the valve wear process is also unknown.

The Commission draws the users' attention to the need for constant and specific monitoring of the operation and the ongoing technical condition of the

Rotax 912 engines installed on the Tecnam P2006T aircraft. In addition, the current maintenance data of both the engine manufacturer and the aircraft manufacturer should always be consulted.

Consideration should also be given to the instructor's decision to abort the approach and continue flying in the vicinity of the airport, without identifying the cause of the engine malfunction. The decision was premature and is not supported by good practice.

4. Furthermore, the Commission makes the following safety recommendations:

No safety recommendations were formulated.

Supervisor of the investigation	Chairperson of the Commission
……..	……..
(signature affixed to the original copy)	*(signature affixed to the original copy)*