



ROUGH RUNNING ENGINE AFTER TAKE-OFF

Operational Awareness

Aircraft: Aquila A210

Location: Lelystad Airport

Flight Type: Training flight (Instructor + Student)

Occurrence Category: Serious Incident

Event Summary

During departure from runway 23, the aircraft experienced **rough running engine and noticeable vibration shortly after lift-off (approximately 150–200 ft AGL)**.

The instructor took control and notified ATC. A precautionary landing was performed **immediately** on the **remaining runway** and the aircraft taxied back without assistance.

During taxi, oil pressure indicated at the lower limit of the green arc, subsequent engine checks showed normal indications.

After consultation with maintenance (VOT), no faults could be reproduced and the aircraft was considered airworthy.

Operational Context

Before departure, the aircraft experienced an extended holding period at the runway holding point due to arriving traffic.

During this time, the engine likely operated at idle or low power for several minutes.

Prolonged low-power operation in piston engines may increase the likelihood of:

- **Spark plug fouling**
- **Carburettor icing**
- **Temporary mixture irregularities**

These conditions may result in:

- **Rough running engine**
- **Noticeable vibration**
- **Temporary loss of smooth power when take-off power is applied**

Potentially leading to an:

Engine Failure After Take-Off (EFATO) if not properly handled.



Operational Awareness for Aquila A210 Pilots

Engine Run-up	
Nose wheel	aligned
Parking brake	set
Fuel selector	fullest tank
Engine instr. & voltmeter	check
Throttle	1700rpm
Oil pressure	checked
Magneto's	max drop/diff. 120/50rpm
Carb.heat	checked (drop 20-50rpm)
Prop.control cycle (3x)	drop 200 rpm then HIGH RPM (fwd) (cycle 1x after 1st flight)
Throttle	CLOSED then 800rpm (1200 RPM when engine cold) Avoid prolonged run 800 – 1200rpm

Before take-off	
Canopy	closed & latched
Magnetos	both
Fuel pump	on
Anti-Collision-Light (ACL)	on
Flaps	checked & set T/O
Carb.heat	as required
Trim	set T/O
Fuel selector	fullest tank, sufficient
Flight instruments	checked
Warning lights	off
Engine instr. & voltmeter	check
Flight controls	free and easy
Seatbelts & harnesses	fastened
PFD/MFD/COMM/NAV	set
Crew briefing	completed
(Safety/departure/TEM)	
	<i>Line-up</i>
Parking brake	release
Carb.heat	COLD (push IN)
Landing light	as required
Transponder	ALT

When experiencing delays at the holding point, consider proactive engine management:

1. Carburettor Heat

Use carb heat as required during extended idle or low-power operation.

2. Prevent Spark Plug Fouling

Periodically increase engine RPM during long holding periods.

3. Additional Run-Up if Required

If delays are significant, repeat run-up checks before departure.

4. Confirm Smooth Power Response

Ensure the engine responds smoothly before committing to full take-off power.

Safety Considerations

- Extended ground delays can create engine conditions that may only become apparent when full power is applied.
- Engine management during prolonged holding can significantly reduce this risk.
- Pilots may benefit from discussing the use of carburettor heat and the prevention of spark plug fouling with their instructors to gain practical guidance based on operational experience and aircraft-specific procedures.
- A thorough **Safety/Departure/TEM Briefing before Take-Off** helps pilots stay prepared for possible emergencies.

Thank you to the crew for reporting and contributing to our shared safety culture.

Karina van Twisk