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## Aviation monitoring programme is flying high

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A dedicated aircraft testing programme is being conducted by condition monitoring specialists, WearCheck, to reduce the risk of catastrophic engine failure, boost safety and reduce maintenance costs?

WearCheck's thriving aviation division analyses used aircraft oil and filters for wear particles, oil degradation and cleanliness of hydraulic fluids. The company's experienced aircraft diagnosticians provide expert insight into potential engine failure based on the test results.

WearCheck technical manager Steven Lumley has spent over ten years in the aviation monitoring team: "We carry out oil and oil filter analysis on aircraft components such as piston-, turboprop-, turbofan- and turboshaft-engines, auxiliary power units (APU), helicopter rotor gearboxes and hydraulic systems," she says.

'In the programme, wear rates are monitored, contamination such as dust, water and fuel in the oil is detected, and the type of oil in use is verified. The tests can also detect oil overheating and oil degradation.

"The four main wear debris monitoring techniques used in WearCheck's laboratories are: spectrographic oil analysis programmes (SOAP); oil filter debris analysis; analytical ferrography, where no filter is available; and magnetic chip detector particle analysis. Oil filter analysis supplements spectrometric oil analysis as filters retain larger wear particles that are generated by abnormal wear," she explains.

Why invest in a bespoke aircraft condition monitoring programme? "The financial and safety benefits of preventative oil filter analysis have been proven time and again," Lumley responds. "We have many case studies where serious incidents were avoided because the failing component was removed or repaired before disaster struck. In one case, a severely damaged bearing was removed from an accessory gearbox. Had the bearing failed, the result would have been an IFSD (in-flight shut-down)," she says.



*WearCheck technical manager, Steven Lara-Lee Lumley.*

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“In another instance, the presence of a large amount of metallic debris prompted the replacement of the propeller gearbox. Subsequent borescope inspection of the gearbox revealed severe ring wear.

Planned maintenance minimises the disruption to an aircraft’s schedule.”

WearCheck is also the only accredited laboratory for Honeywell turbine engines in Africa. US-based Honeywell is one of the world’s largest manufacturers of jet and turboprop engines. As this work is unique and specialised, Honeywell requires that WearCheck’s diagnosticians are specifically trained and certified to diagnose their samples, and that they undergo regular assessment to earn re-certification.

Several diagnosticians recently completed Honeywell’s stringent bi-annual accreditation exam – Steven Lumley, Ravi Chetty, Ashely Mayer and consultant Daan Burger.

Some of WearCheck’s aviation customers are SA Airlink, Execujet Maintenance, National Airways Corporation, CHC Helicopters, Orsmond Aviation, Safair and the South African Airforce 21, 22 and 44 Squadrons.

As well as performing condition monitoring in the aviation sector, WearCheck also provides monitoring, compliance and safety services across a broad range of industries, including marine, mining, electrical and power generation, earth moving, agriculture and more.

WearCheck operates a network of 14 world-class laboratories around Africa and beyond, each of which is fully-equipped with the latest available condition monitoring technology in line with global trends.

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