

NEW KID ON THE BLOCK: WAGTAIL AVIATION'S

Text and photography by Willie Bodenstein

Arriving at Wagtail's facilities situated on a farm close to Parys I was amazed at the more than 12 Gyrocopters on the airfield. There were seriously modified ELAs, Magnis, Sycamores, a Xenon and the unique locally designed and manufactured Kriek, two of which were there for service.



TROJAN



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SAME?



AIR SCHOOL

The prototype Trojan with its sturdy wide undercarriage and oversized tyres



Wagtail Aviation has been actively involved with gyroplanes for more than 10 years. Over the years it has concentrated its activities around the development of the commercial use for these Gyrocopters and has a track record of approximately 9 000 accident free commercial hours. The well-equipped workshop with unique equipment such as an engine dyno and a spin rig capable of taking a full size rotor up to well over 120% of flight rpm. Wagtail is also a SA CAA approved AMO. It has a team of four engineers, four technicians and modern software, which allows Wagtail to handle everything from design, manufacture and maintenance in-house. The wide open Free State grasslands and 1.6 km long private runway make for an ideal environment in which to safely conduct flight testing. Wagtail's flight school is also situated here. It employs two full time flight instructors, both with approved gyroplane test pilot ratings. Conducting flight training at a privately owned airfield improves the efficiency, as there is no other traffic or other parties to accommodate.

The leader of the team, Johan von Ludwig, studied engineering at Pretoria University and in his free time was involved in the development of engine projects at Nissan product development. After finishing his studies and military service Johan started working at SASOL. With some trike experience under his belt, Johan tried his hand at gyrocopter flying and as the saying goes: 'that was the start of it all.' His first gyrocopter was a Magni M16, which now has well over 3 000 hours on the Hobbs meter.

Over the years, with the benefit of thousands of commercial flight hours on the systems, some huge leaps forward have been made in making gyrocopters

safer, easier to operate and even easier to maintain. It is no wonder that recreational fliers have been asking over and over again for these machines to be made available to the general public. Wagtail has now made its first venture into this market with the Trojan, which is available either as a single seat or dual seats for recreational use.

Powered by a Subaru EJ 20 turbo, delivering up to 220 hp, the Trojan has demonstrated a sustained rate of climb of over 350 feet/min with four hours' fuel, a 98 kg pilot and 100 kg of water on board at a density altitude of 8300 feet at 14h00 on a hot Highveld January day. A 36 feet aluminium rotor is standard and an electronically interlocked hydraulic pre-rotator is used to pre-rotate the high inertia rotor to enable really short take-off rolls. The rotor is factory balanced and test flown and there is a real-time two-axis vibration sensor permanently installed in the rotor head to monitor and log vibrations. The rotor system is a very well-engineered tight package with a very effective rotor brake and teeter stop blocks which make tying down the rotor, to avoid it bouncing up and down in windy conditions, totally unnecessary. A wide stance undercarriage with pneumatic damping and really huge six-ply tyres, standing some 420 mm high, puts this Trojan in a completely different class when it comes to rough field operations. A unique feature of the Trojan is that mud and stones kicked up from the tyres move harmlessly past the propeller.

The commercial heritage is still clearly visible with an equipment bay which contained four x 25 litre water containers on the day of our photo shoot. With all of this, the Trojan still carries a standard fuel load of 120 litres of fuel, giving her an endurance of over 4.5 hours. Very impressive for a gyroplane!



The cockpit with EFIS and MFD with in flight net connectivity



The Subaru engine with Garret turbocharger and three-bladed propeller

Wagtail staff



The design and layout of the cockpit was one of the priorities. This is the office where the pilot will spend long hours. A very unique feature is the very powerful, dual core processor, 50 Gig solid state hard drive, WINDOWS based computer which is standard equipment and forms the backbone of the data logging and processing system. A soft start allows the system to boot up and shut down without pilot interaction. A 14" colour LCD screen can display just about anything. With a cellular data module in place, the computer is linked to the outside world and things like real time weather, e-mails, video feeds and messages are now a reality. Wagtail's years of operational experience are clear. One has all the maintenance manuals, fault finding guidelines and complete maintenance history there with you on the computer.

Even better news is that from the middle of 2013 the Trojan will be available in kit form with factory assistance for the assembly. Factory built Trojans will also be a very tempting proposition. The price and different mission equipment available make the Trojan an entry level machine that can be upgraded as required. To the kit builder, the Trojan will be an absolute joy. The Trojan was designed around a modular concept and the engine module can be installed in under four hours. The kit builder will only need to drill a few holes, apply some paint and bolt things together. The wiring loom is universal and once fitted additional equipment can be connected. With the in-house design team, special requirements can be implemented without difficulty.

Typically Wagtail's commercial gyrocopters are sold with maintenance plans and warranties of 500 to 1000 hours, something unheard of in the gyroplane community. When questioned about such a bold move, the answer was simple: "we have the operational history and the design depth to stand by our products. This is how we have operated for thousands of hours already." This new 'kid on the block' has an interesting pedigree and with its rich history is bound to have a dramatic effect on the gyroplane market in years to come. 🚁



The Trojan is built tough for South African conditions



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